

---

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google<sup>TM</sup> books

<https://books.google.com>







**The Library  
of the**



**The Gift of  
Mrs. John MacDonald**

**Class 032**

**Book C437a**

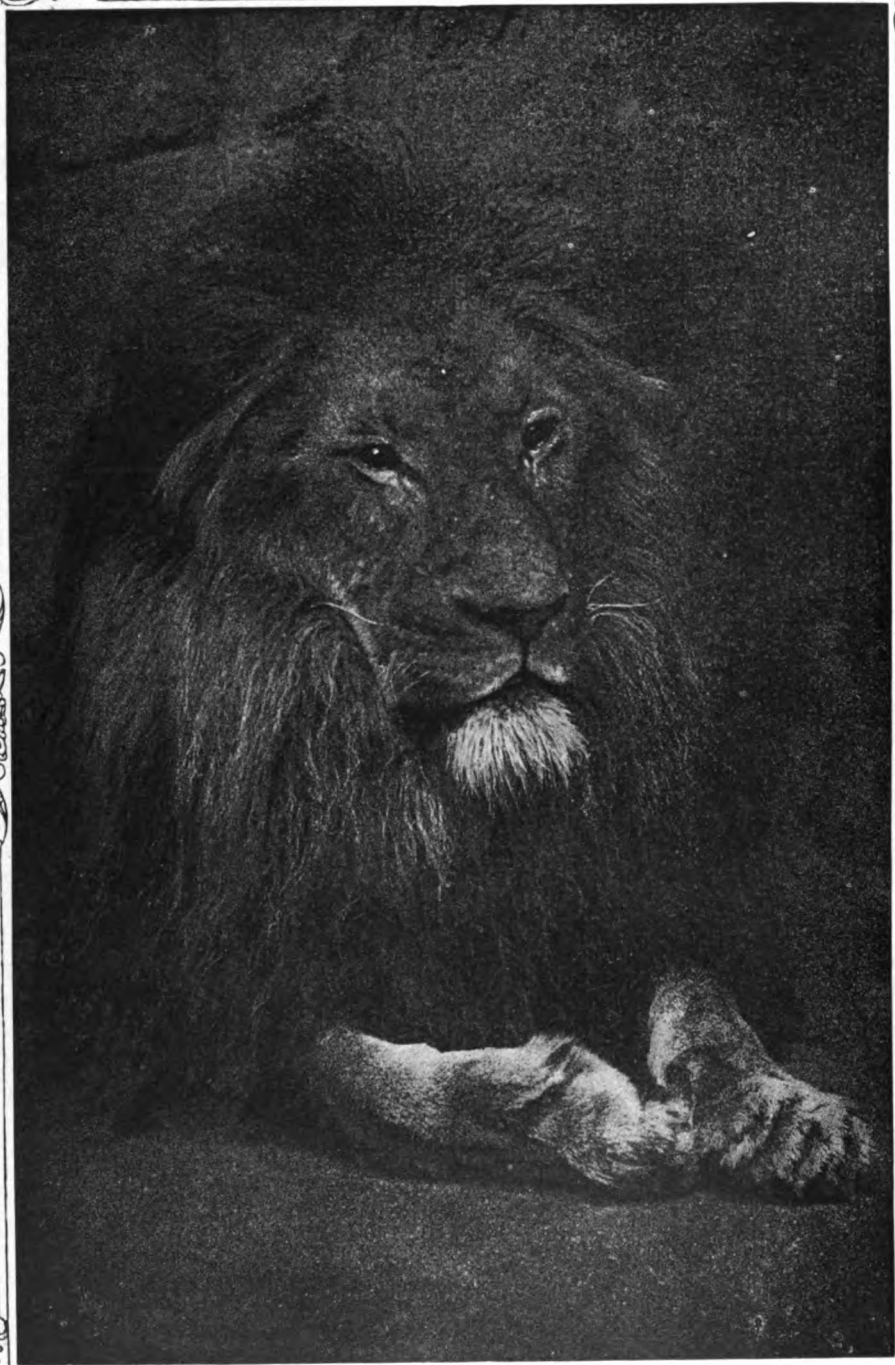
**v. 24**











#### THE KING OF BEASTS

This magnificent head of a lion is a photographic study by the famous animal photographer, Mr. Gambier Bolton, and is reproduced here by permission of the Autotype Company.

# The Book of Knowledge

## The Children's Encyclopædia

EDITORS-IN-CHIEF

ARTHUR MEE  
Temple Chambers, London

HOLLAND THOMPSON, Ph. D.  
The College of The City of New York

With an Introduction by

JOHN H. FINLEY, LL. D.  
President of The College of The City of New York

### DEPARTMENTAL EDITORS AND CONTRIBUTORS

**All Countries**  
FRANCES EPPS

**Natural History**  
ERNEST INGERSOLL

**Plant Life**  
HELEN INGERSOLL

**Stories and Legends**  
EDWARD WRIGHT

**Familiar Things**  
HAROLD BEGBIE

**Men and Women**  
ERNEST A. BRYANT

**Our Own Life**  
DR. C. W. SALEEBY

**Famous Books**  
J. A. HAMMERTON

**School Lessons**  
A. J. FOSTER

**Poetry and Rhymes**  
A. VON HARTMANN

**Dominion of Canada**  
N. A. BRISCO, Ph. D.

**The United States**  
HOLLAND THOMPSON, Ph. D.

**The Earth**  
DR. C. W. SALEEBY

**Golden Deeds**  
M. PERRY MILLS

**Book of Wonder**  
ARTHUR MEE

**Things to Make & Do**  
H. G. FLEMING

Volume XXIV.

NEW YORK: THE GROLIER SOCIETY

LONDON: THE EDUCATIONAL BOOK CO.

UNIV. OF MINNESOTA LIBRARY

**Text and Illustrations in this work are protected  
by copyright as follows :**

Copyright, 1911, by THE GROLIER SOCIETY  
Copyright, 1911, by THE EDUCATIONAL BOOK CO.  
Copyright, 1910-1911, by M. PERRY MILLS  
Copyright, 1908, by AMALGAMATED PRESS, LTD.  
Copyright, 1868, 1870, 1872, 1874, 1875, 1876, 1878, 1881, 1883,  
1884, 1886, 1887, 1888, 1889, 1890, 1891, 1902, 1906, by  
TICKNOR & FIELDS, JAMES R. OSGOOD & Co., and  
HOUGHTON, MIFFLIN & Co.  
Copyright, 1874, 1880, 1892, 1894, 1895, 1896, 1904, 1908, by  
CHARLES SCRIBNER'S SONS  
Copyright, 1908, by THE CENTURY CO.  
Copyright, 1906, by THE BAKER & TAYLOR CO.  
Copyright, 1901, 1907, 1909, by H. C. WHITE CO.  
Copyright, 1897, 1907, by THE AMERICAN BOOK CO.  
Copyright, 1890, 1899, by JAMES WHITCOMB RILEY  
Copyright by PHOTOGRAPHISCHE GESELLSCHAFT  
Copyright by KEYSTONE VIEW CO.  
Copyright by UNDERWOOD & UNDERWOOD

The poems by Thomas Bailey Aldrich, Phoebe Carey, Ralph Waldo Emerson, Oliver Wendell Holmes, James Russell Lowell, John Greenleaf Whittier, Henry Wadsworth Longfellow, Edmund Clarence Stedman, Richard Watson Gilder, John Hay, Edward R. Sill, Bayard Taylor and Celia Thaxter included in this work are reprinted by permission of, and by special arrangement with, Houghton Mifflin Company, the authorized publishers of the Works of these authors. The poems by Robert Louis Stevenson, Eugene Field, Mary Mapes Dodge, Richard Henry Stoddard and Henry Van Dyke included in this work are printed by permission of Charles Scribner's Sons.



## CONTENTS OF THIS VOLUME

This is a short guide only to the principal contents of this volume. It is not possible to give the titles of all the Poems and Rhymes, Legends, Problems, colour pages, questions in the Wonder Book, and many other things that come into the volume; but in all cases are given the pages where these parts of our book begin. The full list of these things comes into the big index to the whole work.

### THE BOOK OF THE UNITED STATES

Digging the Panama Canal . . . . . 5631

### THE BOOK OF FAMILIAR THINGS

Making Iron and Steel . . . . . 5537  
How an Elevator Goes Up and Down . . . . . 5576  
Men Beneath the Waters . . . . . 5585  
Riding on Wheels of Air . . . . . 5677  
The Wonderful Tomb of King Mausolus . . . . . 5566  
Two Famous Old Cities of North America . . . . . 5612  
The Oldest City in the United States . . . . . 5684  
The Box that Speaks to Us . . . . . 5695

### THE BOOK OF WONDER

Why Do We Worry? . . . . . 5573  
What Is Verdigris? . . . . . 5575  
Does Sympathy Help Us? . . . . . 5639  
What Causes Malaria? . . . . . 5641  
What Makes a Headache? . . . . . 5643  
Why Have Some People More Beautiful Voices than Others? . . . . . 5644  
Why Are Saints Drawn with Halos? . . . . . 5650  
How High Can Men Fly? . . . . . 5685  
Why Does a Kite Keep in the Air? . . . . . 5688

See index for full list of questions

### THE BOOK OF NATURE

Unknown Animals . . . . . 5567  
American Trees in Summer . . . . . 5621

### THE BOOK OF MEN AND WOMEN

What Confucius Thought . . . . . 5579  
The Life of Confucius . . . . . 5580  
What Confucianism Means . . . . . 5581  
Some Sayings of Confucius . . . . . 5584

### THE BOOK OF CANADA

Mineral Resources . . . . . 5599  
Maritime Provinces . . . . . 5601  
Canadian Rockies and Beyond . . . . . 5607

### THE BOOK OF GOLDEN DEEDS

Brave Grizel Hume . . . . . 5615  
The Man Who Loved the House . . . . . 5618

### THE STORY OF FAMOUS BOOKS

Ninety-Three . . . . . 5593  
Journal of the Plague Year . . . . . 5596  
Castle on the Cliff . . . . . 5597

### THE BOOK OF STORIES

The King's Guest . . . . . 5651  
The Wonder Book . . . . . 5652  
Proverb Stories . . . . . 5654  
The Hundred Thousand Monkeys . . . . . 5655  
The Kaffir and the Lion . . . . . 5656  
The Search for a Happy Man . . . . . 5689  
A Tale of a Shop Window . . . . . 5691  
The Boy Who Lost His Shadow . . . . . 5693  
The Man Who Drove Downstairs . . . . . 5694  
The Box That Speaks to Us . . . . . 5695

### THE BOOK OF POETRY

Cane-bottomed Chair . . . . . 5613  
What Every Wise Child Should Do . . . . . 5614  
Little Verses . . . . . 5614

### THE BOOK OF ALL COUNTRIES

Land of the Rising Sun . . . . . 5557  
Among the Snow-Capped Alps . . . . . 5669

### THINGS TO MAKE AND TO DO

How To Be Your Own MAGICIAN  
The Mystery of the Suspended Knife . . . . . 5658  
Some Clever Balancing Feats . . . . . 5659  
Cards that Tell Any Number Thought Of . . . . . 5660

### MISCELLANEOUS

How To Make a See-Saw . . . . . 5657  
How To Feel the Pressure of the Air . . . . . 5660  
Verses Made with Figures and Letters . . . . . 5661  
Curious Ways of Peeling an Orange . . . . . 5662  
A Filter that a Boy Can Make . . . . . 5662  
How To Make a Moving Panorama Show . . . . . 5663

955619



	PAGE
An Easily Made Weather-Vane . . .	5664
A Little Boat that Moves in the Water . . .	5664
A Pretty Needlework Bag . . .	5665
A Fern Basket for a Nickel . . .	5665
Hints and Tricks for Odd Moments . . .	5666
The Mysterious Jacob's Ladder . . .	5667
The Dancing Dwarf Illusion . . .	5667
Amusement with Stops and Commas . . .	5668

## SCHOOL LESSONS

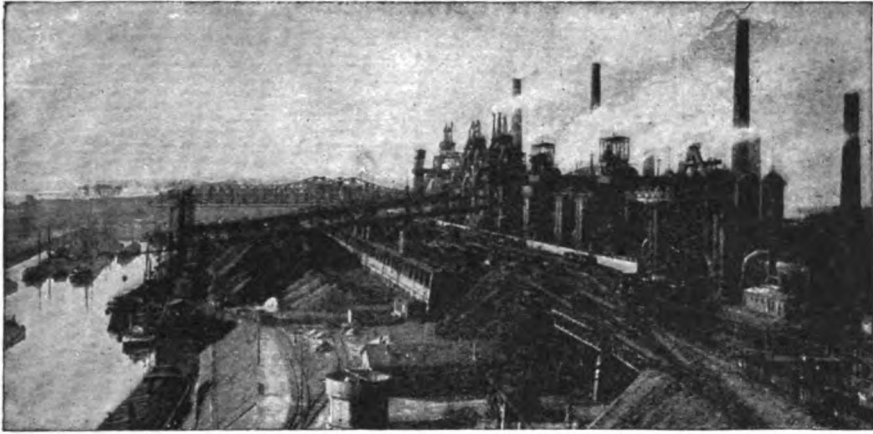
### READING

Meaning of Common Abbreviations . . .	5645
Foreign Words and Phrases . . .	5698

### COLORED PLATES

*To face page*

Lion and the Unicorn . . . . .	5614
Hush-a-bye Baby . . . . .	5615



A great modern ironworks, showing the furnaces and the wharf at which the iron ore is landed.

## MAKING IRON AND STEEL

### THE WONDERFUL SIGHT IN OUR GREAT FURNACES

PERHAPS the boys and girls of to-day do not realise that people did not always have buildings like those we see around useverywhere, nor such great iron bridges as now span our rivers. War ships and guns such as we now have were never thought of a few years ago, and our ocean steamships are gigantic affairs compared to those of former times. So, too, our powerful machinery, steel rails, and cars, and many other things made of iron and steel that I wish I could tell you of, are all bigger and better than those people were used to not so long ago. This all comes about because of the improvements in the making of iron and steel.

Iron and steel are now the commonest and cheapest of all the metals, you know. But this was not always so. The metals gold, silver, and copper were used by the ancients long before anything was known of iron. I think you will easily see why this was so when I tell you that iron is never found in a native state as we find gold, silver, and copper. A man might dig for a lifetime deep down into the earth and never come across any iron. This is because it is always found in

CONTINUED FROM PAGE 54

combination with some other element and must be reduced, in order to be of any use to us. Now the Greeks had discovered how to reduce the ore to make iron and no doubt the Romans learned of them. The people of Great Britain, too, had found a way to produce iron, for when the Romans came to England they found iron works in the Forest of Dean. Of course the methods of all these people were crude and primitive when compared with our way of doing it to-day. You know in order to reduce the ore to iron it must be placed in a furnace with fuel and a blast of air strong enough to increase the heat until the ore melts. The Greek and the Roman way was to heat the ore to a melting point in a furnace which was nothing more than a pit surrounded by walls of clay about a foot high. The fuel for this crude furnace was charcoal. Layers of broken iron ore and charcoal were placed alternately in the furnace until the hole was filled, when a layer of charcoal was heaped over all. A rude form of bellows made from skins furnished the blast. After some hours of firing the melted ore and cinders were found in a lump at the bottom of the furnace,

Copyright, 1911, by Educational Book Co.

The cinders being lighter than the ore settled on top of the mass, when the iron worker broke off this cinder lump from the bloom and what remained was iron. The iron made in this way was very good indeed, but the great cinder heaps left in Yorkshire by the Romans show us that much good material was wasted. In fact the cinder heaps contained so much iron that they served as ore for twenty furnaces working constantly for about three centuries. Crude and primitive as was this method of these people, they, nevertheless, found out the fundamental principles for reducing iron.

In the year 1624 a little colony of Englishmen living at Jamestown built furnaces there on the banks of Falling Creek, and produced the first iron made in this country. This started the iron production in America, and later it was taken up by the states of Massachusetts and Connecticut. Rhode Island soon followed their example, for much "bog" and "pond" ore was found in these eastern states. Furnaces were built at that time close to the source of the iron ore and the forests which served or furnished the fuel; and this section soon became the centre of the iron industry in the New World.

As I have told you, charcoal or burnt wood was the only fuel used at that time. The English, alarmed at the rapid destruction of their forest, were asking what they would do for fuel for their furnaces when the timber was all used up, in much the same way as we are asking to-day what we shall do for fuel when our coal fields give out. They were forced to look for something to take the place of charcoal. Coal was suggested as a substitute, but people laughed at the idea that coal could do the work of heating the furnace as well as what they had been using. Coal had been tried for the smelting of iron but the plan was not understood. We know now it failed because coal was too soft to stand the weight of the iron ore when placed upon it. The weight packed the coal so tight that the air could not find its way through the mass and this prevented the combustion which is neces-

sary to produce a temperature during the smelting process. However, during the process it was observed that much of the coal that was heated burned into coke. This coke showed the power to hold up the ore without being crushed, just what coal was unable to do. From that time coke was the fuel and remains the fuel to-day for smelting ores in furnaces everywhere.

In this country, however, the conditions were different. The forests were large and afforded plenty of timber for making charcoal. In fact, it was so plentiful that charcoal was used here for fifty years after the English had begun to use coal, and the product from furnaces was so much better than that of the coal furnaces that the Americans were encouraged to ship their charcoal iron-metal to England. In time, though, the Americans were forced to face the same problem about their timber as the English had met. Fortunately, at about this time coal was discovered in the new country and the attention was turned to its manufacture into coke, for its use in the growing iron industry.

In 1819 and again in 1841 the attempt had been made with too little success to warrant its adoption. To encourage experimenting, in 1835, the Franklin Institute of Pennsylvania offered a premium of a gold medal to the person who should manufacture in the United States the greatest quantity of iron from ore during the year using no other fuel than bituminous coal. The history of coke-making is one of a series of trials and failures and it was not until 1880 that it was generally accepted as a fuel.

#### THE COAL AND IRON BELT, OR WHERE THE COAL AND IRON ARE FOUND

The greatest iron ore region in this country lies near the shores of Lake Superior. The picture here shows an open pit iron mine of the famous Mesaba Range near Lake Superior in Minnesota. One can see how readily the ore can be taken from the open pit by steam shovels and deposited at once in the cars. These deposits are 300 feet deep in some places. A single mine in Minnesota is said to have produced 1,681,000 long tons in one year, more than was produced in all America before 1854. One

would naturally expect the iron industries to be placed near these pits, but this is not the case. The great iron manufacturing centres are Pennsylvania, Ohio, Illinois, New York, West Virginia, and Virginia, where little or no iron is found, and all the iron ore must be shipped from ports on the shores of Lake Superior to these places.

If you follow the line of the bituminous coal belt, from which all coke is made, you will see that it runs through the states I have just mentioned. This is called the Appalachian coal belt and is about 800 miles long and about 150 miles wide and contains within its border or compass all the great centres of our iron and steel industries. In fact these industries will be found to lie close to the source of the fuel rather than the source of the ore.

#### HOW THE FUEL IS MADE THAT SUPPLIES THE GREAT IRON FURNACES

Success in the iron and steel industries is due to the making of coke out of coal, but not until the year 1880 did the manufacture of coke mean much to the iron industry. Before that time very little coke was made in the United States. However, the industry for making coke out of soft coal in what is called a Beehive coking oven has now attained a position of importance. The name of the oven was no doubt suggested from its resemblance to the ancient do ne-shaped beehive.

These ovens have an opening at the top through which five tons or more of coal is dumped. This charge of coal falls on the bottom of the oven, and is then lighted by placing shavings of wood on the top of the heap. The process of fusing and coking now begins on the top surface of the charge of coal and goes down through the mass. It takes about forty-eight hours to burn this five tons of coal into coke. The gases formed during the burning process, passing upwards through the mass, deposit carbon. This gives to the coke the bright silvery coating which is the distinguishing mark of the best coke for smelting ores in blast furnaces.

#### THE BLAST FURNACE

This furnace is the first step in the making of iron and steel, and we shall

now tell you something about it. It is a tall cylindrical iron or steel shell, seventy-five and sometimes one hundred feet tall, lined with fire brick on the inside. The fuel for this furnace is coke, which is the blast furnace fuel everywhere. Nearly all the coke manufactured to-day is burned up to make heat for melting the ore into pig iron.

The description of the blast furnace as given under the picture will tell you all about its structure. You will learn, too, that the product of this furnace is pig iron, the raw material for the puddling furnace, which produces wrought iron, and for the cupola furnace, which produces cast iron, the Bessemer Converter for the making of soft steels, and the open hearth furnaces for carbon steels and the crucible furnace for high carbon or tool steels.

#### THE PUDDLING FURNACE

In 1784, Henry Cort invented the puddling furnace for the reducing of pig iron by a coal-heated process. Wrought iron, the product of this furnace, is very tough metal and will stand shocks but is easily welded. If you will look at the picture shown here, you will see a furnace not unlike the open hearth furnace also shown. Now if you take pig iron as it comes from the blast furnace and put it on the hearth of the furnace I have just told you of, and build a fire in the fire box which lies in the end of the furnace, using coal, and watch the fire as it increases in temperature, you would see the gases from the coal light up just as they rise to the top of the furnace on their way to the chimney. This heats the mass of pig lying upon the hearth. In a little while the iron begins to melt and the slag forms little pools on the bottom of the furnace. In about an hour the puddler stirs the whole mass with a long bar of iron called a rabbling bar. He keeps the temperature of the metal just below the melting point. At this temperature iron is in a pasty condition. By rolling it around he forms a ball weighing from 150 to 200 pounds. He is careful to see that the metal does not get too hot, for, if it should, it could not be gathered into a ball. So the heat is regulated by opening and closing the



dampener on top of the chimney. When the ball is made it is taken out of the furnace by the aid of a pair of tongs and placed on a buggy, and rushed off to the squeezer, where all the slag or impurities are squeezed out of it. Then it is put between the rollers and reduced to the proper size. This is called wrought iron and is placed on the markets of the world to be sold for making chains, grills, horse-shoes, bolts, nuts, car handles, steps, and the like.

#### THE FURNACES THAT MAKE STEEL FOR GUNS AND ARMOUR PLATE

The product of the open hearth furnace is a very fine steel, out of which is made armour plate used on war vessels. Large guns are made from this steel, steel castings, large propeller shafts for vessels, crank shafts, and also most of the steel used on automobile forgings are made from this product. When you visit a steel mill where these furnaces are in operation you will see that the charging door is about fifteen or twenty feet above the floor level. The brick work below the furnace hearth is built up in a checker system, through which the gases rise, and are heated before reaching the melting zone. The fuel used for the open hearth furnace is coal gas. It is the gas that is heated to a white heat on its way to the melting zone. This, you see, keeps the furnace in a very high temperature all the time, for there is no cold air of any kind entering the furnace while the furnace is in operation. In many ways this furnace is the most satisfactory of any mentioned for producing large quantities of steel. The molten metal can be held in this furnace any number of hours during which time tests can be made until the required carbon point is determined. This assures a constant quality of steel.

#### THE CONVERTER THAT CHANGED THE WHOLE HISTORY OF STEEL-MAKING

The pictures and the description tell the story of Sir Henry Bessemer's great invention for changing pig iron into steel without the use of fuel. Molten cast iron is put into the converter. The blast added to the heat already in the cast iron, increases the heat enough to

burn all the impurities out of the molten mass. This makes a steel that is used for building material, bridges, steel cars, vehicles, railroad rails, fire escapes, grills, and is now replacing wrought iron for many things. It has no fibre like that of wrought iron, but can be twisted, bent, drawn out and shaped to any desired form without danger of breaking. Many blacksmiths prefer this steel to wrought iron for their work.

#### THE STEEL THAT IS USED FOR THE CUTTING TOOLS OF THE WORLD

Crucible steel is found in the market under four different names. It is sometimes called (1) crucible steel, because it is melted in a graphite pot or crucible; (2) high carbon steel because it contains more carbon than any of the steels, (3) cast steel because it is cast into ingots and hammered into shapes for the market; (4) tool steel because all cutting tools are made from it, including our table cutlery, butcher knife blades, pocket knife blades, files, surgical instruments, and the like.

The method of manufacturing this steel is one of the simplest, yet great care must be exercised during the melting process. Refined iron is placed in a graphite pot or crucible with a certain amount of carbon. The crucible is then placed in the melting pit, which is a hole made in the ground, about four feet deep, lined with fire brick. The fuel for melting the metal in these pots is gas, preheated in the same way as was that of the open hearth furnace. It takes about three hours for the metal to melt and during that time the temperature of the furnace reaches 3000° F. You can see that men who have this kind of work to do must be trained especially for the purpose. Their work days are from four to five hours and during that time they are dressed either in asbestos clothing or in overalls saturated with water. This is done to keep the heat away from their bodies while lifting the pots up from the pits. If they were not strong they could not stand the intense heat. It is the skill required in handling the hot metal just at the right time and the difficulty in making men fit to do this work that keeps tool steel at the high price asked.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5585

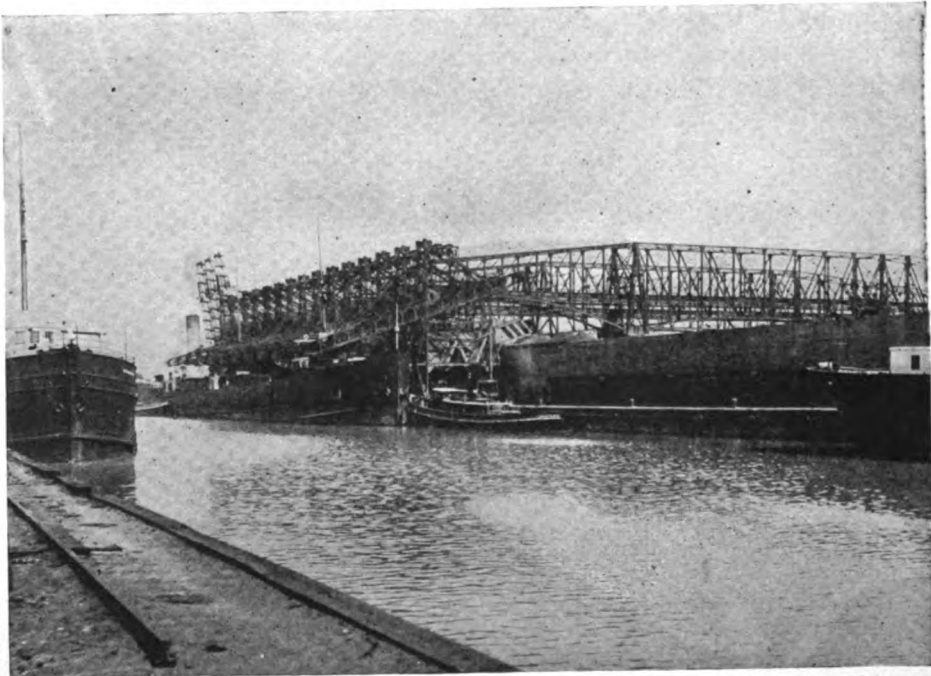
## THE OPEN PIT MINE FROM WHICH THE ORE COMES



Most of the iron we now use in this country comes from the open pit mines of the Lake Superior region. The deposits are sometimes three hundred feet deep and seem almost inexhaustible. Here you see a steam shovel digging into the bank and loading the cars. In another place we show how the steam shovel is at work digging the Panama Canal. One of these machines does more work than a thousand men could do with picks and shovels. In the next pictures we shall follow the ore to the furnaces.

Picture by courtesy of the Illinois Steel Co.

## FOLLOWING THE ORE TO THE FURNACE



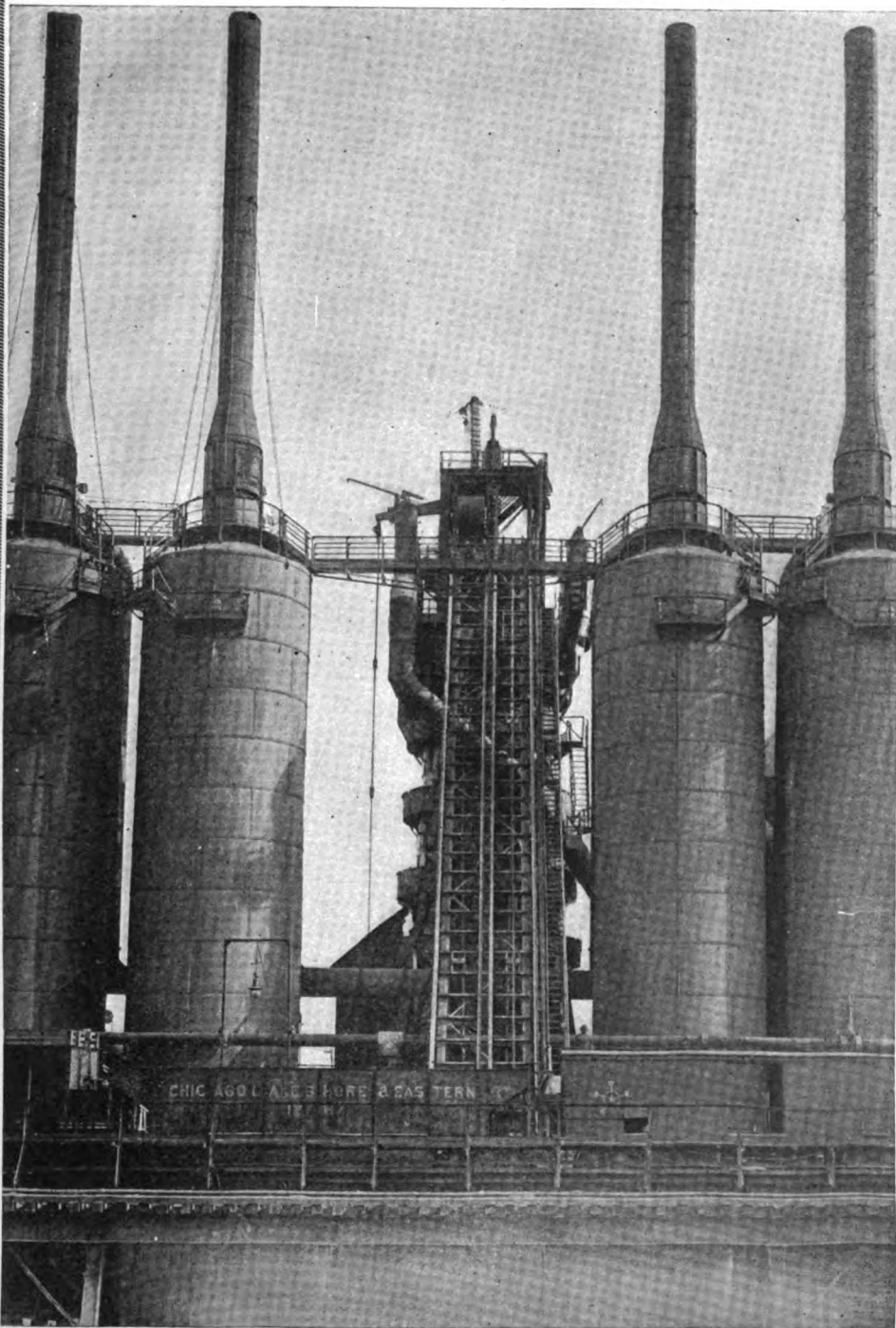
The iron ore which the steam shovel loads into the cars is then transferred to great ore ships which carry it either to the furnace or to another transfer point. Here we see one of the ships which is being unloaded.



Think how long it would take to unload one of these ships by means of shovels. This is one of many scoops which, when let down into the ship, gather up hundreds of pounds of ore, and is quickly run back where it can dump its load and come back for another.

Pictures by courtesy of the Illinois Steel Co.

## THE GREAT BLAST FURNACES

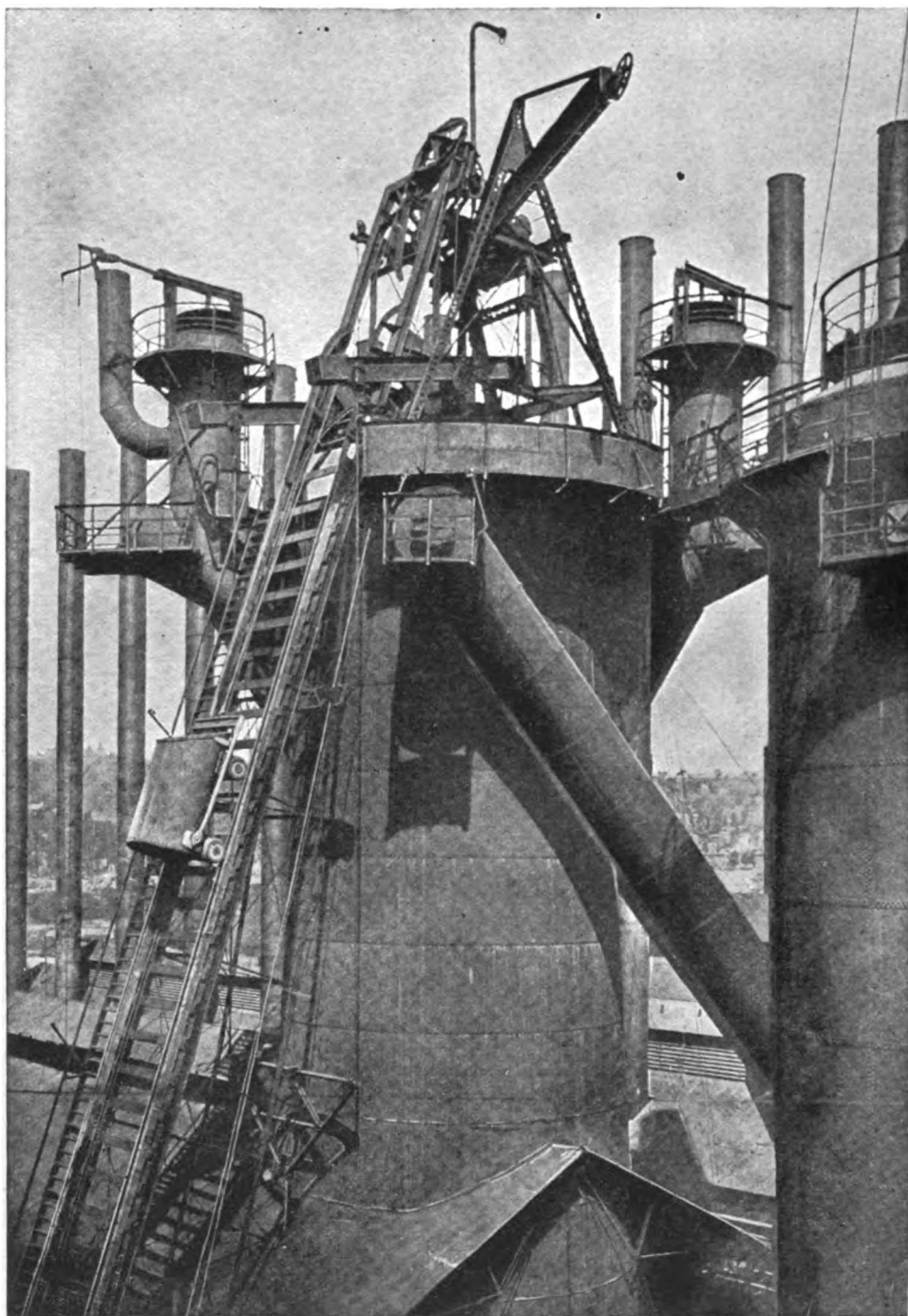


Now we come to the great steel works, the name of which you would recognise if we were to tell you. Here is a row of the blast furnaces which are fully described later when we show you the top of one and a diagram of the interior of another. In the centre is the hoist which raises the ore, the coke and the limestone to the top where they are fed into the great monsters.

Picture by courtesy of the Illinois Steel Co.

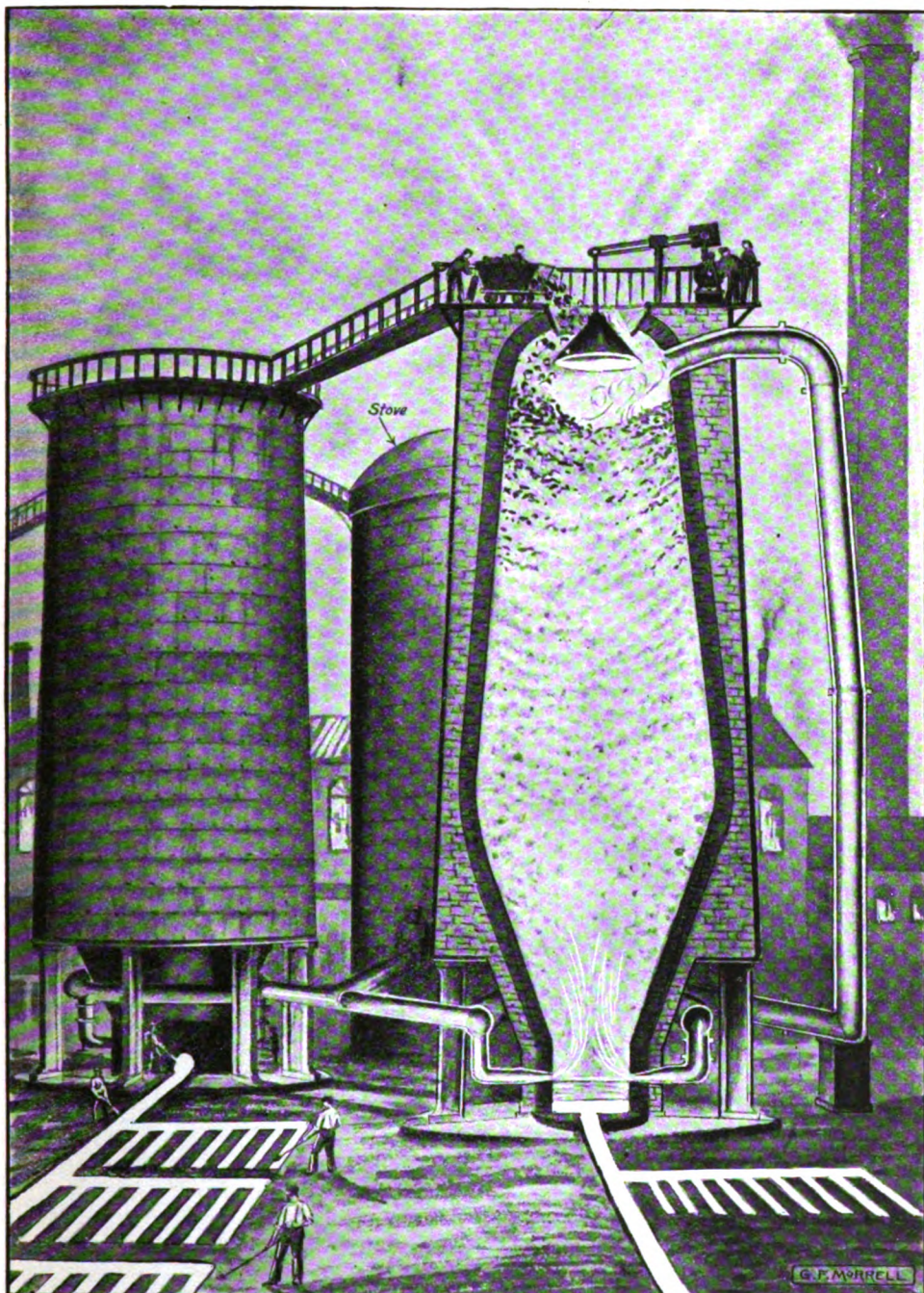


## THE TOP OF A MIGHTY BLAST FURNACE



Here we see the top of one of the huge blast furnaces in which the ore is melted and the pig-iron produced. Pig-iron is really cast iron, and it received its name because, when it was run into trenches lying side by side, it was jokingly said to resemble a number of little pigs. The rough iron ore is pulled to the top of the furnace in great buckets, as shown in the picture. The blast furnaces are often 100 feet high and 120 feet round inside, and each one can produce 700 tons of pig-iron in a day. When once the fire is started it is kept going for years, and if by accident it goes out and the molten iron inside becomes solid, the whole furnace has to be pulled down and rebuilt, at a cost of thousands of pounds. Over 50,000,000 tons of pig-iron are produced in the world in a single year.

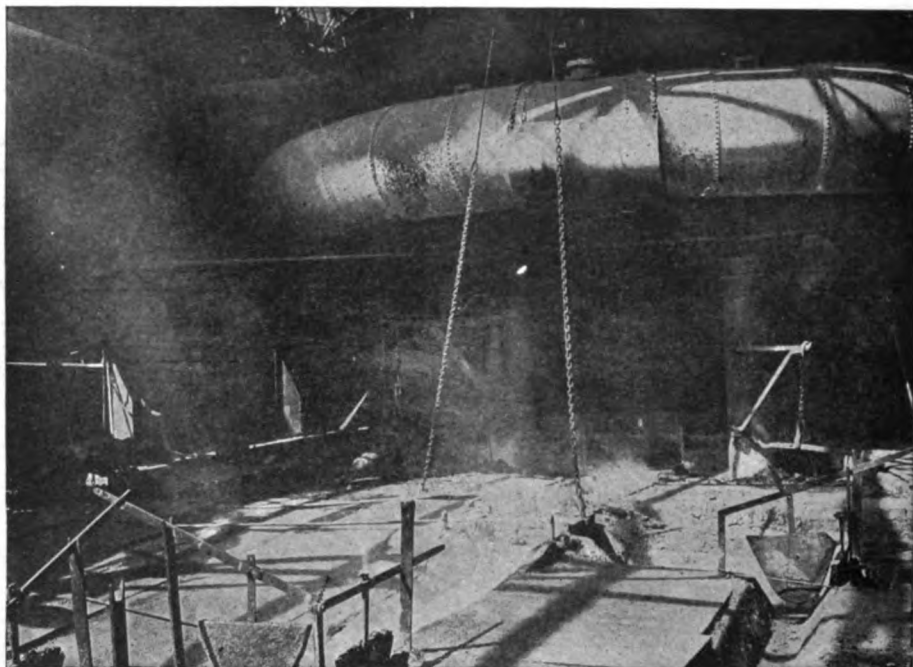
## THE FIRE THAT MELTS IRON



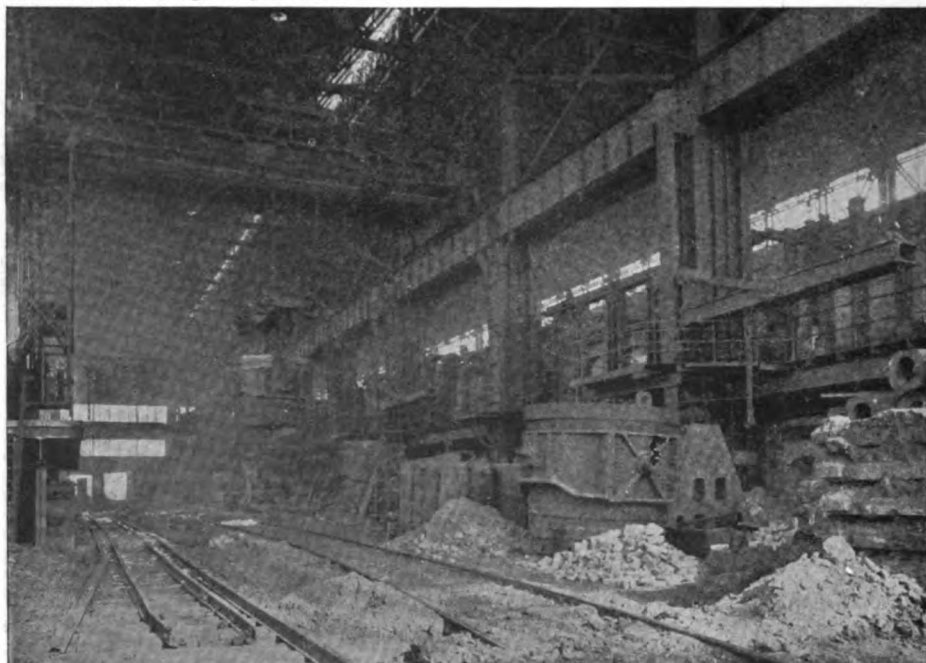
This diagram shows the beginning of iron and steel. The ore dug out of the earth is carried to the top of the great shaft, in which a huge fire is burning. The lid of the furnace is lowered as seen, and the ore falls into the fiery furnace. There it lies, in the greatest heat that men can produce by fire. The lid closes, and the gases rush into the pipe on the right and into the stove, where they help to drive machinery. This machinery, in turn, forces hot air into the bottom of the furnace through the little entrance that we see, and the tremendous force of this hot air rises through the heart of the fiery furnace and melts the iron out of the rock, until it trickles like water. At the bottom of the furnace the melted iron collects, and every few hours the "tap hole" is opened and the white-hot iron runs into the groove along the ground, and from this into other grooves called "sand moulds," because they are cut out in sand. Here these streams of iron lie still until they set hard and can be taken out as solid bars.



## TWO INTERESTING PROCESSES



This picture shows the bottom of a blast furnace. The iron is divided. The slag or impurities run in one direction while the metal goes in the other. The melted iron is hauled to the endless-chain casting pig machine. When all the melted iron is tapped the hole at the bottom is plugged up with soft fire clay and remains so until enough is again melted down.



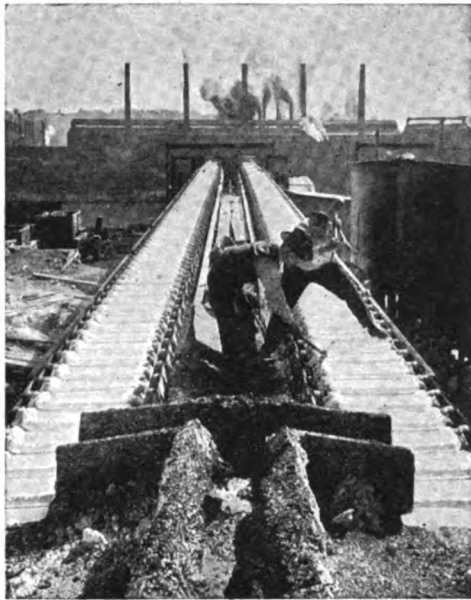
This picture is a little out of its order. It shows an open hearth furnace which is described in the text and another picture of which is shown on page 5549. Steel made by this process is used for many things.

Pictures by courtesy of the Illinois Steel Co.

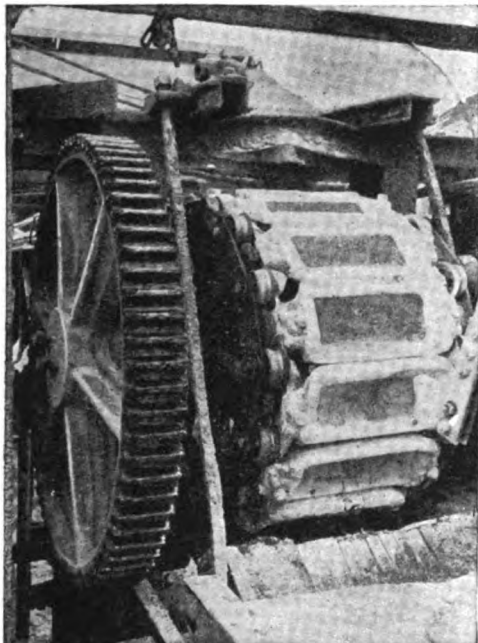
# AN ENDLESS CHAIN OF WHITE-HOT IRON



The improvements in the manufacture of iron have been marvellous, and three blast furnaces at a single foundry will now produce in one year as much pig-iron as was made by the whole world a century ago. In this picture molten pig-iron is being poured into moulds from a great ladle which received its fiery load direct from the furnace.



The most advanced ironworks make the pig-iron into ingots, as shown in these pictures. Instead of being run into sand trenches, the molten metal is tapped into a great vessel called a ladle, as seen in the first picture, and from this it is poured into a series of moulds in a double line. Sometimes the line of moulds is in a circle.



The moulds run upon endless chains, and as succeeding moulds are filled so the chain moves on. Then, when the metal has cooled sufficiently, the chain of moulds turns round a wheel, as shown in this picture, and the iron ingots fall into cars waiting to receive them. Although solid, they are still at a very high temperature.



As the hot ingots are loaded into the cars, they are played upon by sprays of cold water. In pig, or cast, iron about three parts of every hundred are carbon. Wrought iron has practically no carbon, and steel is between the two, having usually about one part of carbon in every hundred parts, although it varies considerably.

## TWENTY TONS OF STEEL MADE IN TWENTY MINUTES



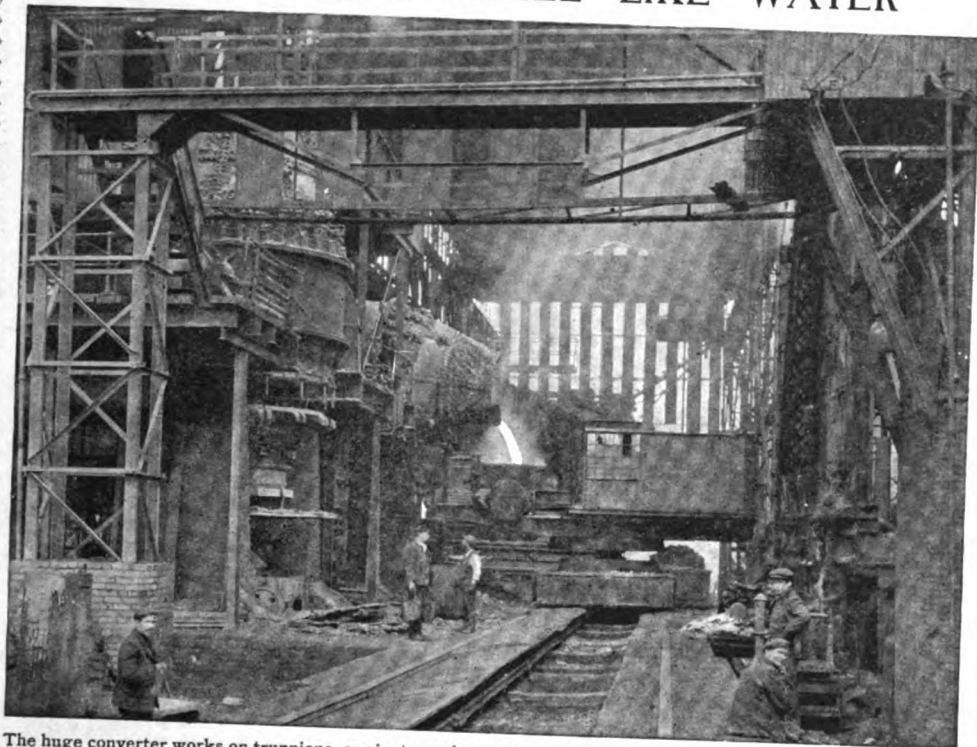
The first cheap and rapid process for making steel, a process by which more than half the world's steel is still made, is that known as the Bessemer process. It was invented by Sir Henry Bessemer, and greatly improved by David Mushet. Molten pig-iron is first of all poured into a vessel called a converter, as shown in this picture.



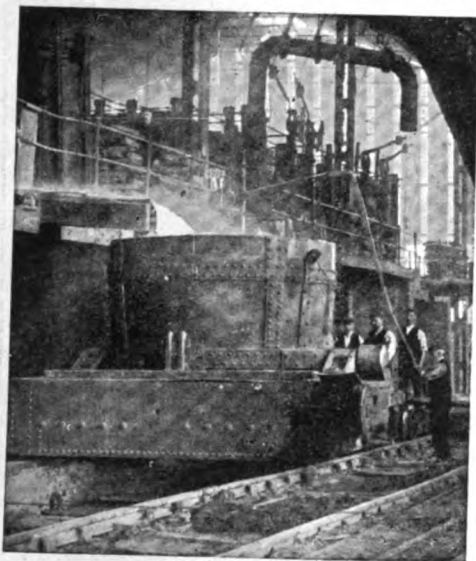
When the molten metal is in the converter, a blast of cold air is blown up through it in small jets. A roaring flame rushes from the mouth of the vessel, as can be seen here, and this is first of all violet, then orange, and then a dazzling white. Later, when the colour becomes a faint blue, all the carbon has been burnt up. Molten metal, containing the right proportion of carbon, is added, and the white-hot mass is at once converted into steel. The process takes less than twenty minutes, and a large Bessemer converter at a modern steel-works holds twenty tons.

Photographs copyright by H. C. White Co.

## POURING OUT STEEL LIKE WATER

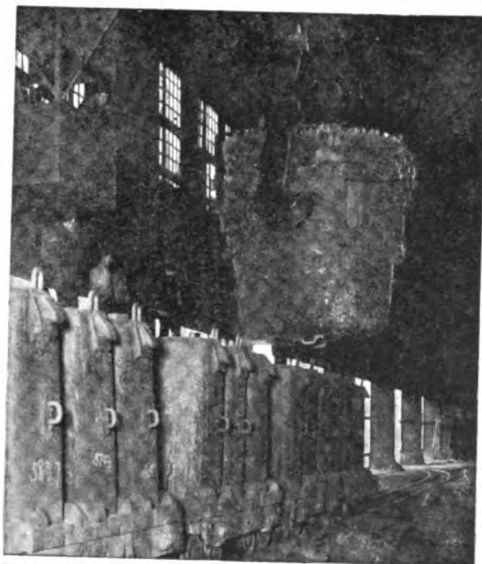


The huge converter works on trunnions, or pivots, and so soon as the steel is ready, the converter is turned and the liquid metal is poured into a great ladle, as easily as milk or water is poured from a jug into a cup. In this picture we can see the steel in process of being poured out. When the metal in the converter is at its greatest heat, the impurities in the iron, known as "slag," float at the top, and are often blown out during the blast as white-hot cinders.



Another way of making steel is the open-hearth system, the first stages of which are shown on p. 5546. By this process, instead of burning up all the carbon in the iron and then adding the right quantity, as in the Bessemer process, only part of the carbon is burnt, and whatever is necessary is added. Here the steel is being tapped.

Copyright by H. C. White Co.



The huge ladle into which the molten steel has been poured, either from an open-hearth furnace or from a Bessemer converter, is then moved along by a great crane over a series of moulds, and a plug-hole in the ladle is opened so that in turn each mould may be filled. The great ladle in the picture holds more than seventy tons.

## THE BLINDING GLORY OF MOLTEN STEEL

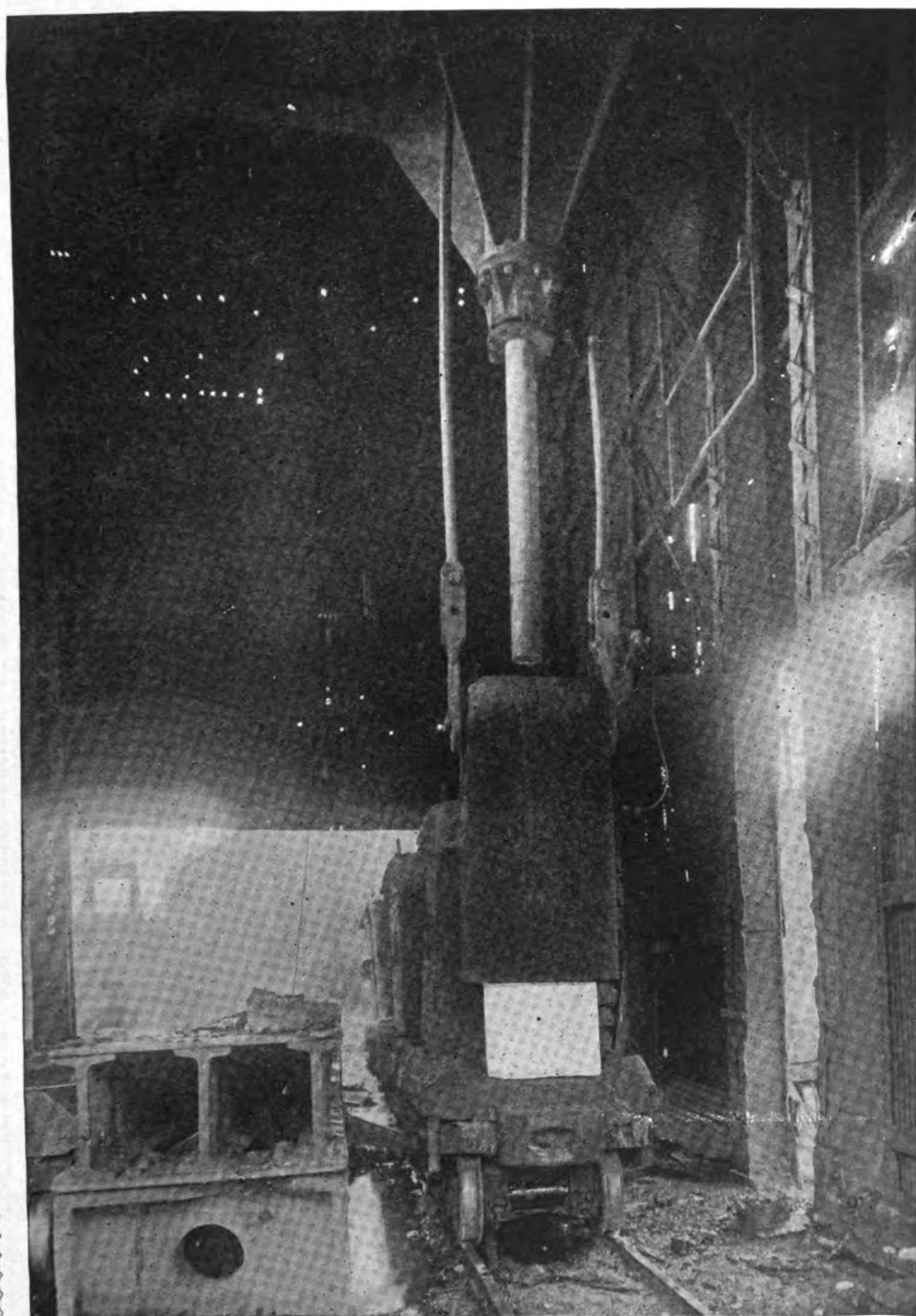


There are few sights more impressive or awe-inspiring than a great steel works when the blast is being blown through the Bessemer converters, or the fiery liquid is being poured out into ladles. It is in such a place and at such a time that one realizes the marvellous power and greatness of the mind of man, that can invent and carry out such tremendous processes. Here is liquid fire sufficient to destroy a city and slay ten thousand men if once it got loose, and yet, by sheer power of the human mind, it is under absolute control, and is handled as safely and with as little concern as the housewife handles milk. From this picture we get some idea of the wonder of molten metal.

Picture by courtesy of United States Steel Corporation



## THE WONDERFUL TRAIN OF FIRE

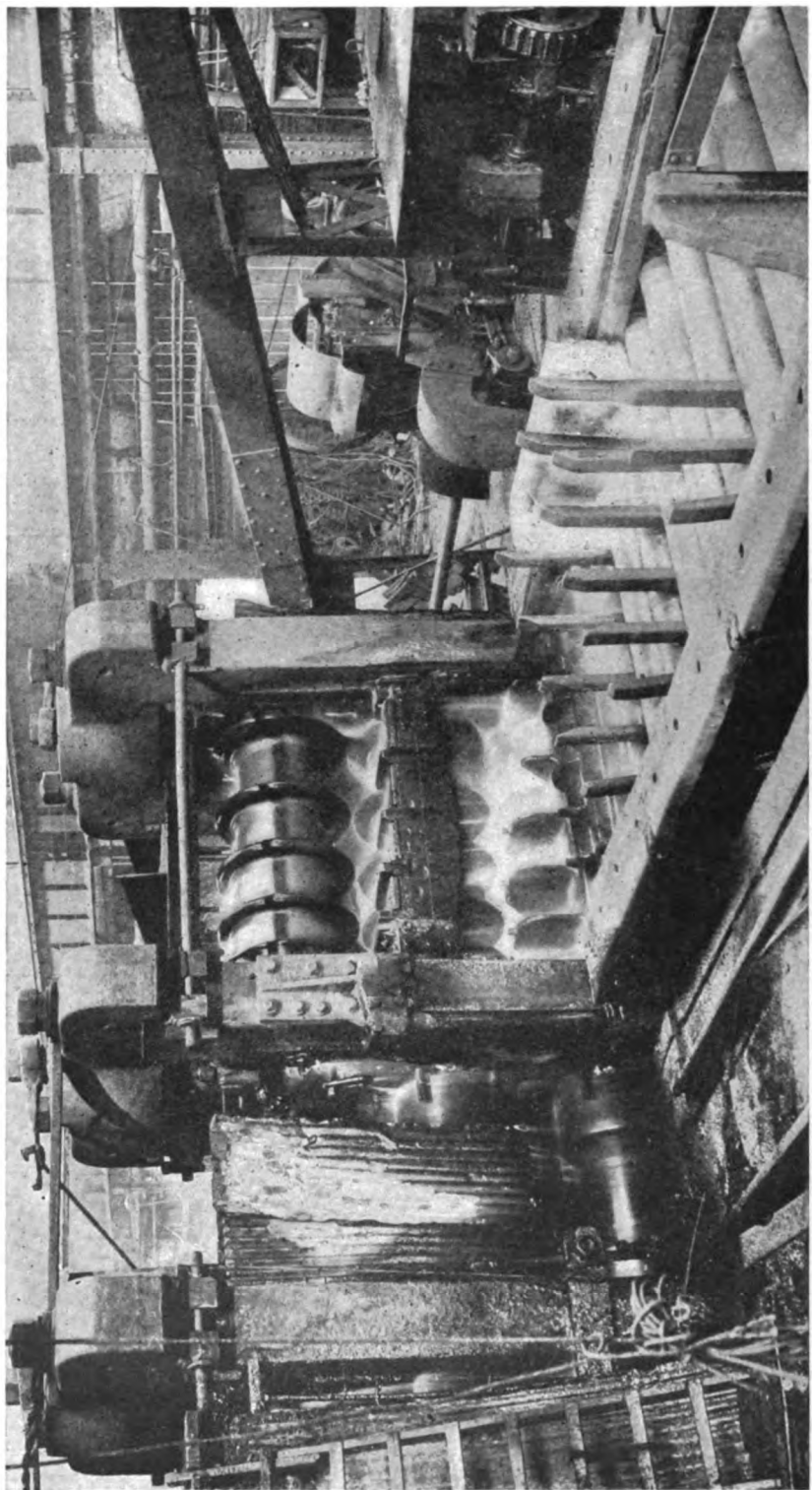


When the steel from the ladle that was poured into moulds has sufficiently cooled, the moulds are removed, and the glowing ingots are taken by a train to the rolling-mills, the procession of fiery pillars presenting an extraordinary and striking sight, especially if it be dark. Iron and steel have been truly called "kings of the earth," for our modern civilisation is largely founded upon them, and were they removed entirely, the whole fabric of modern life would come down with a crash. If there has been a stone age and a bronze age, the present is, without doubt, the age of steel.

By courtesy of the United States Steel Corporation



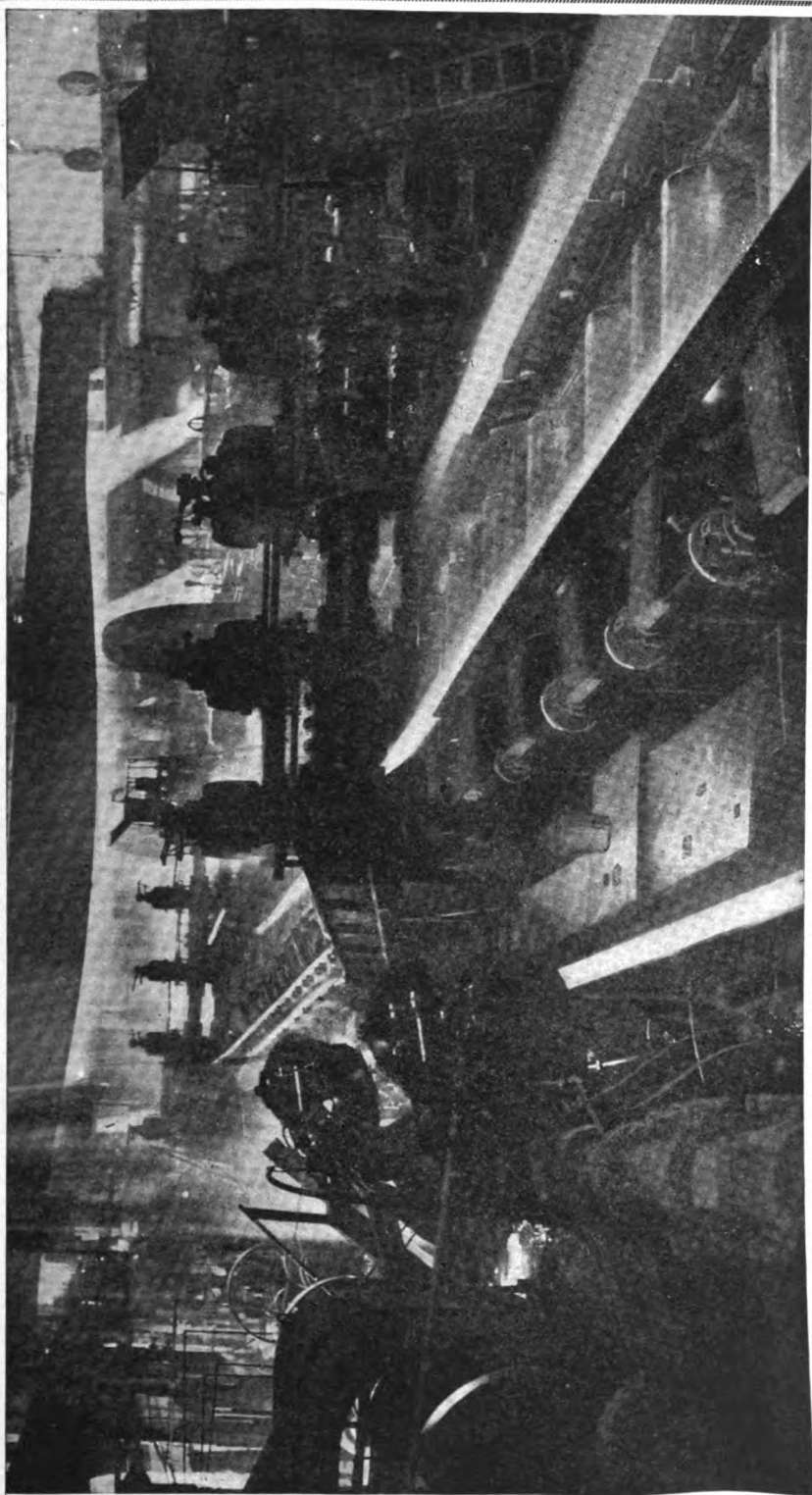
## THE FIRST STEP IN THE MANUFACTURE OF STEEL RAILS



This picture shows the beginning of the manufacture of steel rails from ingots. The great ingot which you see after being heated to exactly the right temperature is forced between the first set of rolls which begin to reduce the size and increase the length. It comes out in the form of a beam, which then goes on to the next set of rollers.

Picture by courtesy of the Illinois Steel Co.

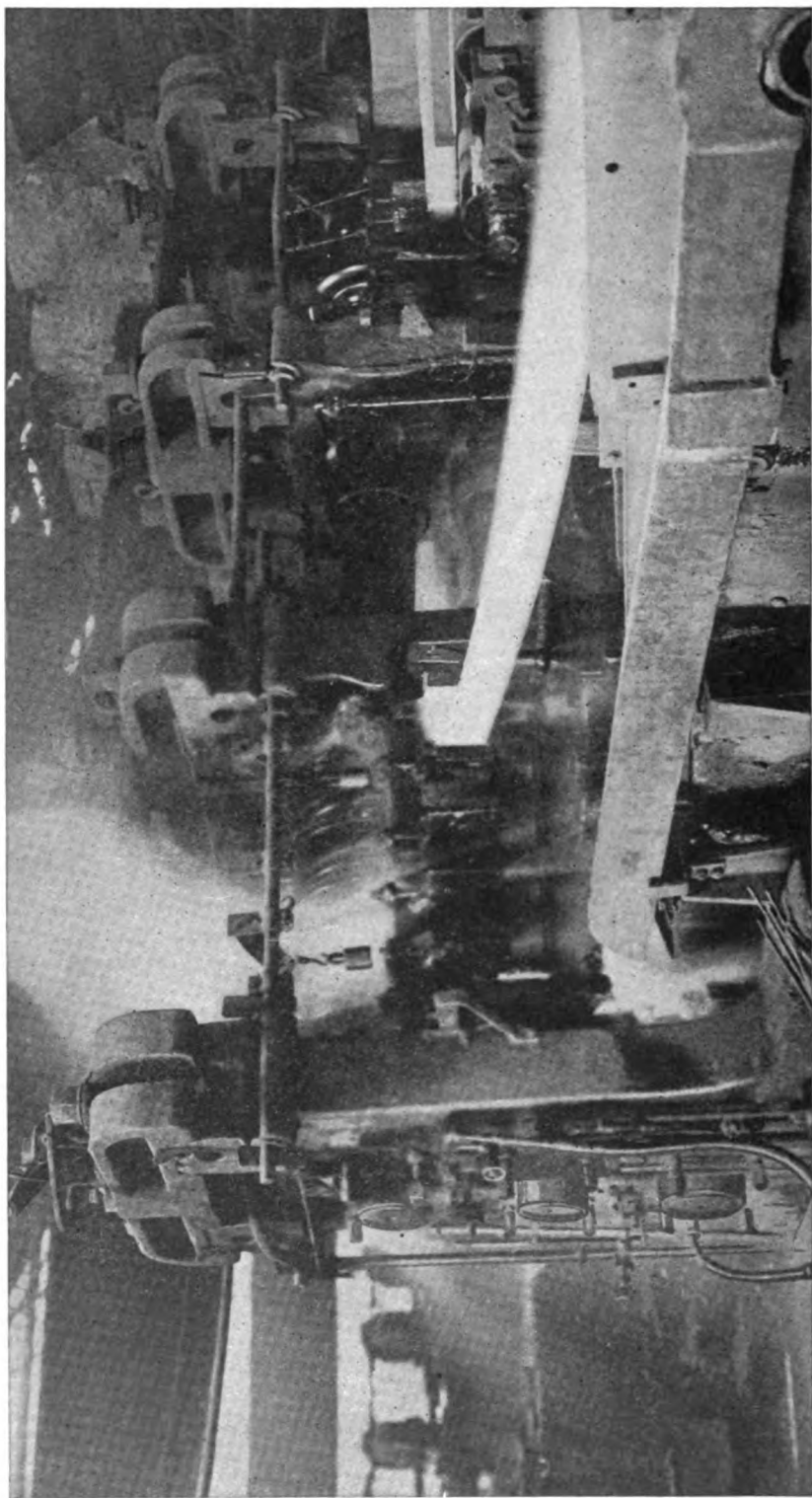
## THE BEAM IS BECOMING A RAIL



Here we see a great room full of machines similar to that we saw on the preceding page. The process is continued and the rail is beginning to take its final form. The machine does most of the work, and only the guiding brains of a few men are necessary. It has been only a little while since the labour of many men could not do at all what you see here being done easily and quickly.

Picture by courtesy of the Illinois Steel Co.

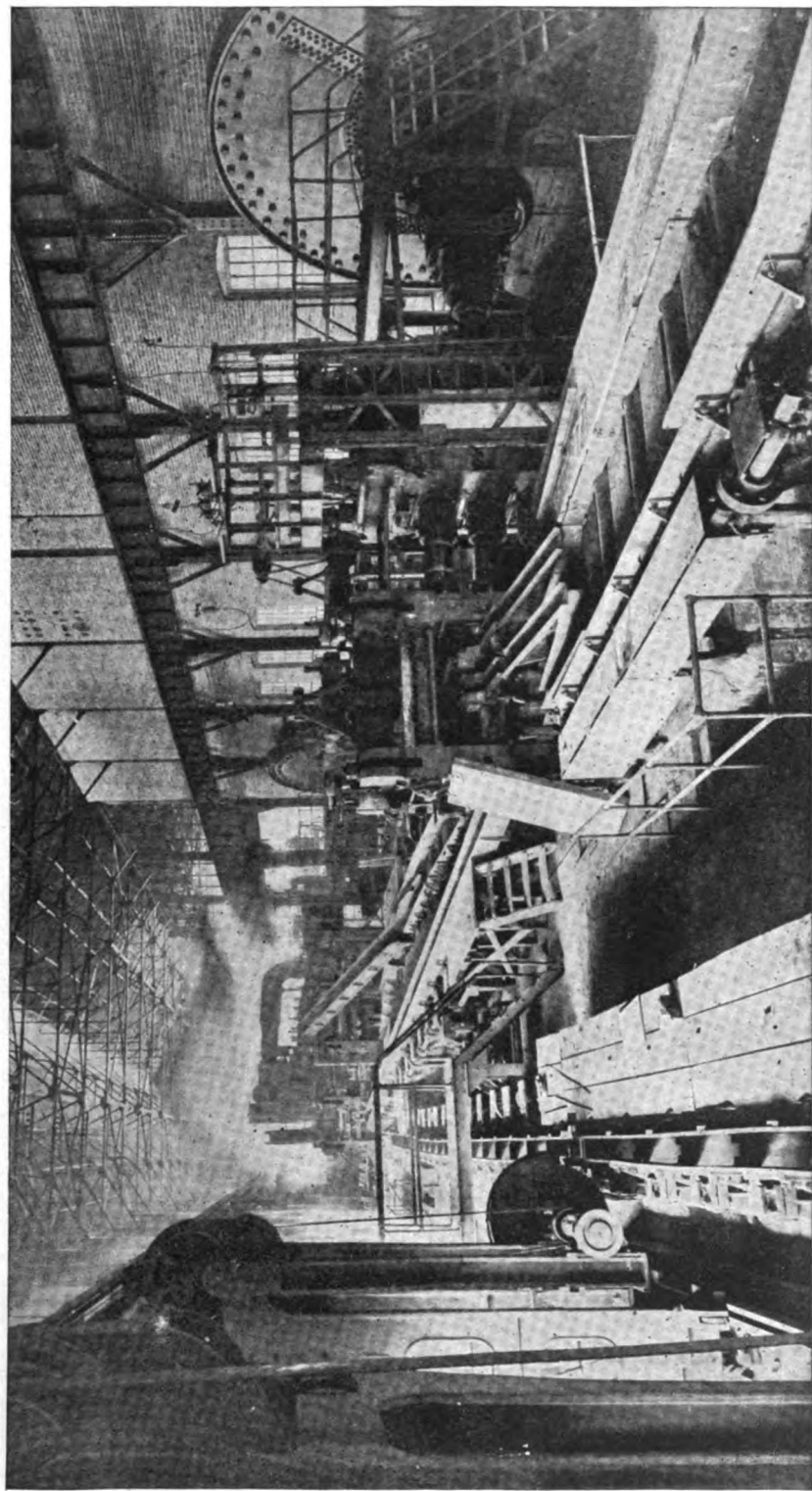
## THE INGOT HAS BECOME A BEAM



The beam which has gone through the first set of rolls shown on the preceding page now is being drawn out into rails or beams for railways, bridges and even for use in high buildings. The intensely hot steel in the grasp of these machines is pressed and drawn as if it were so much butter. This is one of the most wonderful sights in a steel mill.

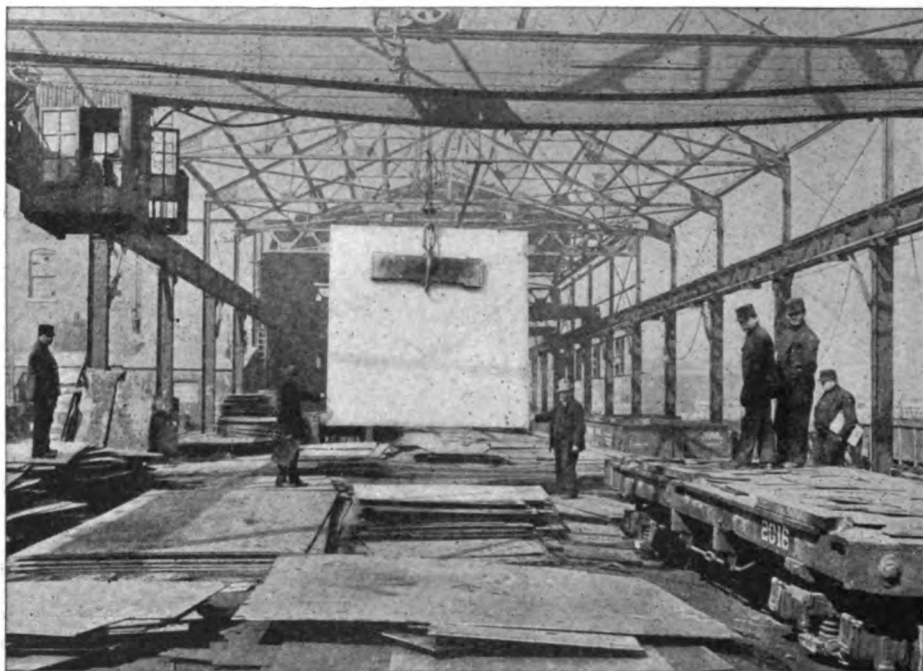
Picture by courtesy of the Illinois Steel Co.

## THE INTERIOR OF A STEEL MILL AT REST

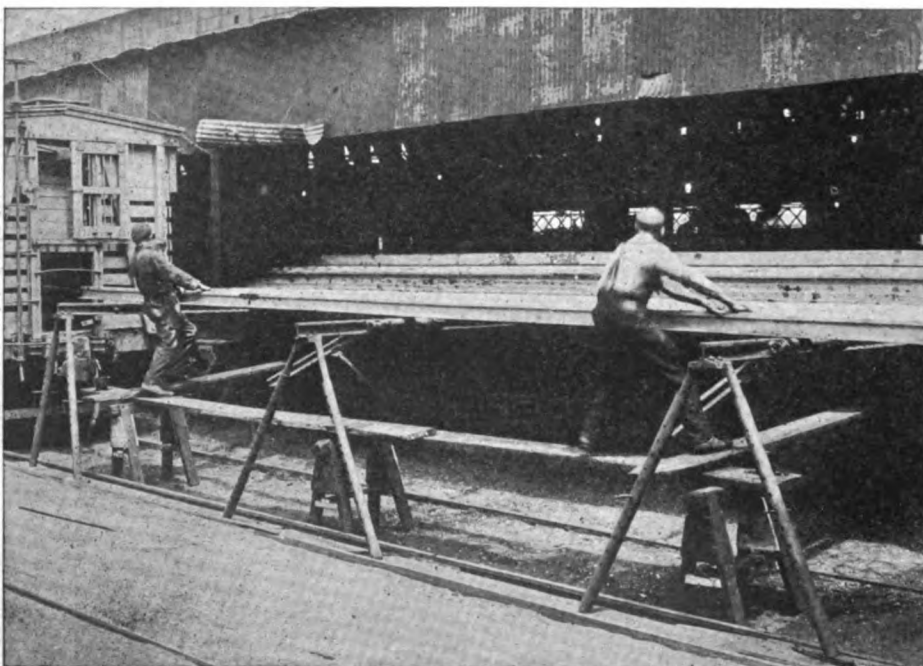


This is the interior of a rail mill when work is not going on. It seems strangely different from the preceding pictures where we saw the whole mill filled with the blinding light of the white-hot metal, as the great rails and beams went from one set of rolls to another, each of which left them a little more like the finished product. Picture by courtesy of the Illinois Steel Co.

## THE FINISHED PRODUCT



One of the interesting devices to save labour is the magnet which moves the heavy steel plates with so much ease. The magnet lifts the plate, and then carries it to a point immediately above the car. The current is then cut off and the plate drops. Without the magnet, handling the plates would be difficult and tedious.



Here we see men loading heavy steel rails into a car. It is interesting to wonder where these rails will finally be used. Perhaps it will be in our own country, perhaps in Canada, South America or even in China.

Pictures by courtesy of the Illinois Steel Co.  
THE NEXT FAMILIAR THINGS BEGIN ON PAGE 569





JAPANESE LABOURERS WORKING IN A RICE-FIELD

## THE LAND OF THE RISING SUN

### A HOLIDAY IN BEAUTIFUL JAPAN

ONE of the ways of seeing Japan is to take a ticket for around the world, and stop as long as possible at the middle "station." With a globe before us, and one forefinger on Great Britain, the other on Japan, we think it over. If we go westwards to the Far East, we must cross two great oceans, and a continent; if we take an easterly route, we can go by steamer all the way, through the Mediterranean, Suez Canal, and Indian Ocean, which will take us about seven weeks; or we can take the train from end to end of the great double continent, Eurasia, which lies between Britain and Japan, an amazing journey of about a fortnight from Paris to Moscow, and on to Vladivostock, and thence across the Sea of Japan in a few days more.

But this return ticket with which we can travel out and home again, without turning back, costs more than many of us spend in a lifetime of holidays, and even if we take the whole time for which it is available—two years—so much is there to see, and do, and learn everywhere, that we seem always in a perpetual rush, and always saying good-byes before we are ready to go. It is miserable saying good-bye—*Sayonara*—to Japan. So now for a second way in which to see the wonderful country, without

tickets or sad good-byes. We start, if possible, though this does not really matter, in a swing or a hammock, in an orchard full of white and pink blossom; and as we gaze hard at the blue sky through the snowy glory tipped with golden sunshine, we pass—that is, the mind part of us passes—into the Land of the Rising Sun.

See how the long trail of islands which form to-day the Empire of Japan stretches off the eastern coast of Asia from Saghalien to Formosa. They are the highest parts of a huge mountain chain rising from a deep plain below the ocean. Toward the north it is nearly always winter, and here, chiefly in the island of Yezo, live the Brownies, as we may call them, of the fairyland of Japan.

These are the Ainos, descendants of an older and quite distinct race. They have been driven gradually northwards, and live apart from the Japanese in a poor way of their own, with many interesting customs. As they do not improve or learn much they are dying out as a race.

In the southernmost part of the island-empire—in beautiful Formosa—it is always summer. Here, too, the natives are quite distinct from the Japanese; it is not very long since they came under their rule. The main



THE MAIN STREET OF TOKIO

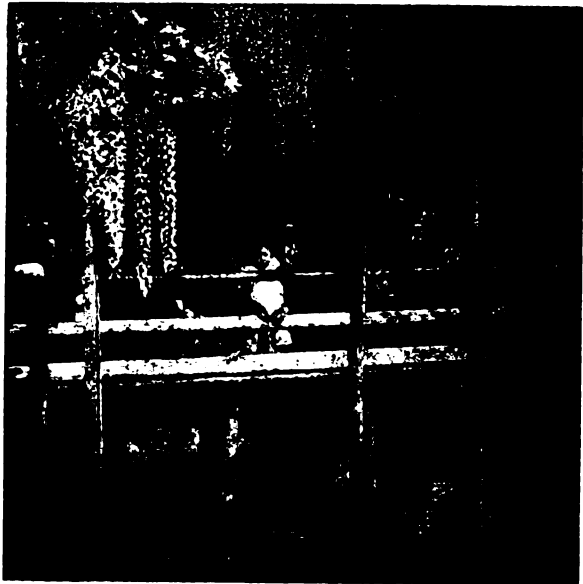
body of Japan consists of the islands opposite Korea, which is on the other side of the Sea of Japan. Here are the great cities and ports, grown of late years to be the wonder of the world; here are the mountains that hold so much treasure, though some of the tops pour forth flame and smoke and bitter destruction.

Here, too, down the rugged mountain-sides the short rivers come foaming white to the sea after the wet season. It is in this part of Japan, too, that we find the millions of tiny fields and farms, where great and valuable crops are carefully raised, in the valleys and in made terraces on the lower slopes of the mountains, all watered and manured as thoroughly as if they were gardens. The mountain-tops are reflected in many grand, still lakes, and the fleecy clouds scudding across the blue sky, the rustling willows, all look so life-like in these mirrors of Nature that we can hardly persuade ourselves that the mountains and clouds and trees are not really there below the water. Between three of the main islands, in the very heart of fairyland, lies the inland Sea of Japan. There is a feeling of infinite quiet and charm about this sea—often called the most beautiful in the world—that makes us long to sail on and on for ever in its soft air.

Its clear blue water is lovely; the little islands, with trees and shrubs growing right to the water's edge, many with interesting shrines and temples, make a series of perfect pictures. But we are going to land, and begin a closer view of the country at Yokohama, the chief port of Japan on the side that faces America, across the wide Pacific. While still far out at sea we come in sight of the highest mountain in Japan, more than twice as high as our Mount Washington. As we gaze long at it, rising from the hidden and distant plain, so lonely and shadowy, so grandly simple in its form of an almost perfect cone, and crowned with pure white snow, we feel that we can

understand a little the great love and reverence the Japanese have for it, and the delight their artists take in representing it on so much of their work.

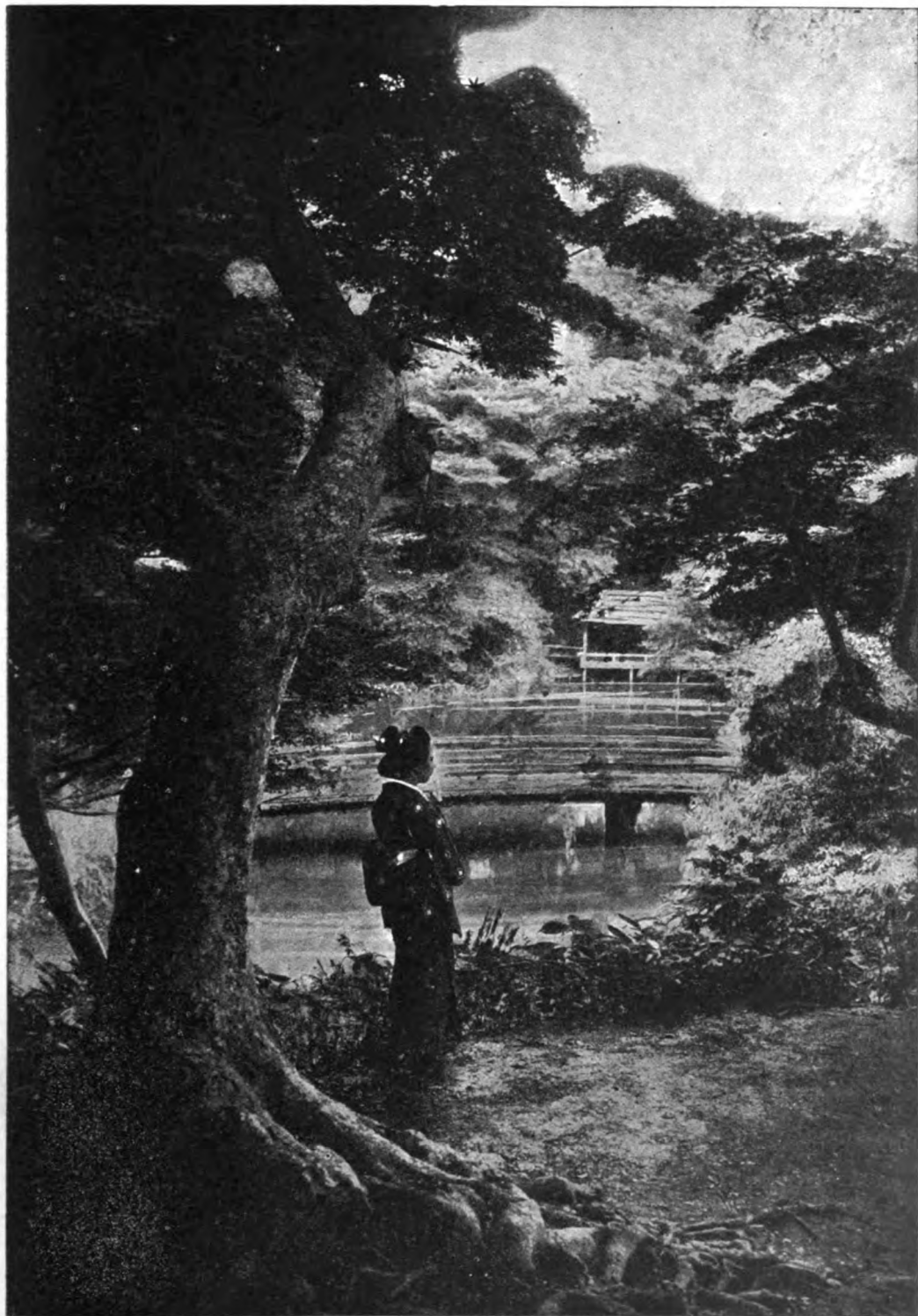
It is Fujiyama, the Fire Goddess mountain. For all its peaceful appearance it is a slumbering volcano, formed of ashes and lava flung out of its crater. We long to climb it, for we hear that the path is a good one, and feel that it would be well to join the white-robed pilgrims, with bells jangling as they walk, who visit it with so much devotion, and rise before dawn to greet the sun as it mounts



WISTARIA GROWING IN A JAPANESE PARK

Both photographs copyrighted by H. C. White Co.

## IN THE WONDERFUL FAIRYLAND OF JAPAN



Japan is the world's fairyland. With its beautiful scenery and its wonderful masses of dainty colour, it seems more like a splendid playground than a country which is taking a serious part in the real work of the modern world.



from the vast ocean, and colours the world afresh. It would be a new experience, too, to boil eggs in a hot spring.

But Yokohama comes first. The steam whistles and mass of shipping of many nations, the busy docks and creaking cranes, the warehouses and piles of goods, remind us that all the world comes to trade at Yokohama.

But how different do the coolies look, in their scanty blue clothes, from our dock labourers at home; what short policemen; how queer it seems to be whirled through the streets in a rickshaw, like a tiny hansom, with a man instead of a horse between the shafts!

garden-park, surrounded by a moat full of brown water, crossed here and there by arched bridges.

The houses are all built more or less on the same plan. There is in every case a roof, often curved, of thatch or tiles, held by posts. The walls are formed of sliding panels of strong oiled paper, which runs in grooves on floor and ceiling. Extra rooms are provided as required by sliding in extra panels. There are no doors or passages. Wooden shutters cover the outside paper walls, and at night are placed closely, each shutter keeping the next in place, the last being fastened with a bolt. One



A STREET IN TOKIO, WITH A LADY RIDING IN A RICKSHAW. THE PUBLIC CARRIAGE OF JAPAN

Our hotel is on much the same plan as those at home, and we see many Japanese in Western costume of coat and trousers. But still more are clothed in the national dress, the kimonos, which are like dressing-gowns, most of them in varied colours, men, women, and children all wearing much the same shaped garment.

Our plan is to go on to Tokio, about twenty miles distant by rail, for a long stay. It is the capital of the empire, an immense "city of beautiful distances," in the midst of which lives the mikado, or emperor. His spreading palace, with its heavy curved roofs and white walls, stands in a wonderfully laid-out

of the reasons for building houses in this simple and light way is that Japan is a country of earthquakes—it is said they have three hundred and sixty-five in a year—and if a house of paper and boards is shaken down it is less dangerous than if it were high and heavy, and it is easy to build it up again.

The fronts are open in the daytime, so we can see how simple is the furnishing of these homes. The floors are covered with beautiful soft straw mats, spotlessly clean, for boots and clogs worn out of doors are left outside, and the owners walk about indoors in their thick white *tabi*, or socks with a division for the big

toe. In the daytime there are cushions to sit upon, no chairs, and at meals a low table is brought in for each person.

When hospitably asked to join in one of these meals, we find it very cramping to sit long on the floor, and very difficult to sip the numerous little cups of bitter tea without milk and sugar, as if we enjoyed them. There is no bread and butter, also very little meat is eaten in Japan, and the flavour of the dishes of fish and vegetables is very strange to Western taste. But the chief difficulty is how to get the food to our mouths with chopsticks instead of knife, fork, and spoon, especially as rice is one of the chief foods.

At night, thick cotton quilts, called *futons*, are laid on the floor, with a block of wood for a pillow, and those used to it sleep as comfortably between their *futons* as we do in our spring beds, with blankets and sheets and feather pillows. In the morning all the bedding and washing-bowls are cleared away into cupboards. There are no chimneys, for

little charcoal portable stoves serve for cooking and warmth. This is the sort of accommodation we have when we go to Fujiyama, and upon other excursions.

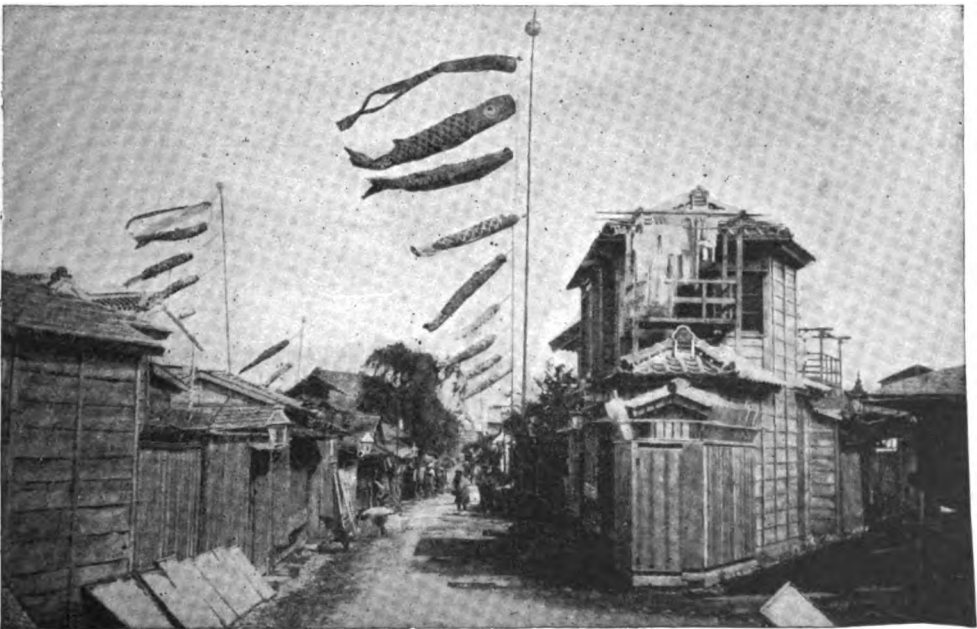
All this seems strange to us, but even more so does the custom of the Japanese in keeping most of the family treasures in a storehouse, or godown; and the

pictures, which are seldom framed, screens, vases, and other ornaments are brought out, one or two at a time, to the living-house to be enjoyed and admired. We are never tired of looking at the bazaars and shops, only we want to buy everything, especially the dolls and toys, and the hundreds of pretty things made in Japan that we feel those at home will like for presents. We

spend much time in the parks, for we know nothing like them in our own country. All is most carefully laid out to look like a landscape in miniature. As we linger over the lakes and streams, the little islands and bridges, and quaint summer-houses, noting the trees planted in just the right position, and of just the



FUJIYAMA, THE GREAT VOLCANO OF JAPAN  
Copyright by H. C. White Co.



A STREET IN YOKOHAMA DECORATED FOR THE GREAT ANNUAL BOYS' FESTIVAL

right sizes to fit in with the whole scheme, we feel as if we were walking in the scenery of a willow-pattern plate. But charming as is everything else, nothing delights us so much as the flowers of Japan. There flowers grow so well, and are so carefully tended, that there is a perfect feast of colour over the land nearly everywhere, and nearly all the year. The gay procession begins with the fruit-tree blossom in early spring, so much appreciated that there is a special holiday for everyone to go out and see it at its best in the great parks.

As the months pass on, there follow the magnificent purple and white wistarias, hanging from heights and trellises like curtains, the grand irises and lilies, great fields of them, the creamy lotuses, and crimson peonies and azaleas, and countless others, ending up in the late autumn with every kind of chrysanthemum—a perfect blaze of glory, which is set off by the red and gold of the autumn leaves. Truly a "jocund" company! And the flowers lead us on to the children, for

they are as gay and joyous as the flowers themselves, especially on the great holidays. Then they put on their brightest kimonos—blue, pink, gold, scarlet, with sprays of wistaria, cherry blossom, roses, printed or woven, or embroidered across them, and around the waist a fine broad *obi*, or sash, of as beautiful material as the

parents can afford, tied in large butterfly bows at the back. As the glossy black hair of the little girls is neatly arranged in grown-up fashion with fine combs and pins, they look like little copies of their mothers. These little *mousmes* seem always merry and pretty and active. The boys also wear kimonos, but not quite so fine as those that the girls wear. As soon as they are seven they are proud to wear little trousers underneath, instead of crimson petticoats, like their sisters. As for the babies—if we have a chance of making friends with a Japanese baby, we do not know how to give it up. They are just like the Japanese dolls we know and love. The little head is partly



THE INSIDE OF A JAPANESE HOUSE  
Copyright by H. C. White Co.



A CLASS OF JAPANESE GIRLS IN SCHOOL AT TOKIO

shaved, and cuddles into your neck just as the dolls do. The soft little hands and feet have fat folds round them, and the little kimono is tied with a narrow sash. While the baby is quite small, it is carefully tied in a shawl to its mother or sister's back, and sleeps peacefully there, or watches with its serious black eyes, quite contentedly, the sweeping and cooking, or the games that are being played.

For Japanese children, and quite old grown-ups, too, are grand at games. We look on with amazement at a kite contest. A great dragon and a bird are flying high in the air—can you feel how strongly they tug at the string? Another great interest is having wonderful competitions in top-spinning. Battledore and shuttlecock, and ball games, are all favourites. The best, or honourable, dolls, as they are called, with their clothes and furniture, are kept in the godown with other family treasures, often handed down from grandmothers' grandmothers, and are brought out when the girls keep high festival on the third of March. The boys have their great festival on the fifth of May.

It is said that Japanese children are never naughty, never cry; if that is true, it shows what good parents they have. At any rate, it is one of the greatest pleasures to watch their politeness; even the babies are trained in gentle manners and obedience, and they seem always happy and content. Their parents are devoted

to them, though it would not occur to them to kiss and pet them—that is not the custom of the country. They bring them up as well as they can, and keep them very clean, for hot baths—very hot baths—are universal in Japan for every-

body, even the poorest. They also buy the children toys according to their means, and give them treats of every kind, especially at the fairs and festivals, which make up a large part of the busy Japanese life, that has no weekly Sundays. But

Japanese children work hard as well as play thoroughly. It takes years to learn to read the difficult Chinese characters which they borrowed from their neighbours hundreds of years ago. A Japanese kindergarten is a delightful sight, so is a class at work with a rabbit or bird before them, reproducing it in modelling or painting from Nature, using both hands equally well. We are surprised at the beautiful results,

till we remember that they belong to a nation of artists, the best handicraftsmen in the world. The schools of Japan are full to overflowing, and are of every kind to meet the needs of the different classes of learners. The boys are carefully trained in gymnastics, which so develop their strength that when they grow

up they can tackle strong men of other nations much larger than themselves.

As we go round the schools, it seems strange to us to see the readers turning over the leaves backwards, for a Japanese book begins where ours ends. A very



HOW LADIES TRAVEL IN THE COUNTRY PARTS OF JAPAN



JAPANESE GIRLS PLAYING SHUTTLECOCK

favourite subject is the country's history. The memory of those who are dead and gone is held in the greatest respect; ancestors are never forgotten. Children enjoy going to the plays in which the stirring deeds of old heroes are acted at length, and visiting the temples and tombs of the mighty dead, which are among the great sights of Japan.

But the little mousmés grow up very quickly, and marry early, and then their turn comes to wear sober greys and browns, to stay quietly at home and wait on their husband and his relations, and bring up the next generation of joyous, good children.

And the boys, so clever with kites and tops, soon have to follow their fathers, according to their station in life, in doing all the manifold kinds of work needed in the empire. Perhaps it is careful

farming and gardening, or fishing, or something connected with the various handicrafts, the lacquer work, bronze, china, baskets, toys, for which the country is famous. Since the days, only



A FAMILY OF AINOS IN THEIR HOME  
The Ainu are the earliest known inhabitants of Japan  
Copyright by H. C. White Co.

sixty years ago, when Japan opened her gates to the world beyond, many go to work in mills and factories, and at trades connected with all the modern inventions so quickly adopted by New Japan. All, too, must take their turn in serving their country in the wonderful new army and navy, which have already

astonished the world in two great wars. And they have to learn to use a vote.

Japan has done great things, but the hardest time is yet to come, for the great mass of the people are just beginning to adopt Western ideas, and yet the old ones die hard.



JAPANESE CHILDREN OF A KINDERGARTEN SCHOOL IN TOKYO DRESSED IN NATIONAL COSTUME  
The photographs in these pages are by Underwood & Underwood and the H. C. White Company



## ON THE ROAD TO THE CITY OF TEMPLES



Copyright by H. C. White Co.

Here we see a long avenue of beautiful Japanese cryptomeria trees leading to the temples at Nikko. Nikko is one of the sacred cities of Japan and is full of terraced temples, filled with a multitude of queer little statues of gods. Some of the cryptomeria trees in this avenue are fully fifty or sixty feet high.

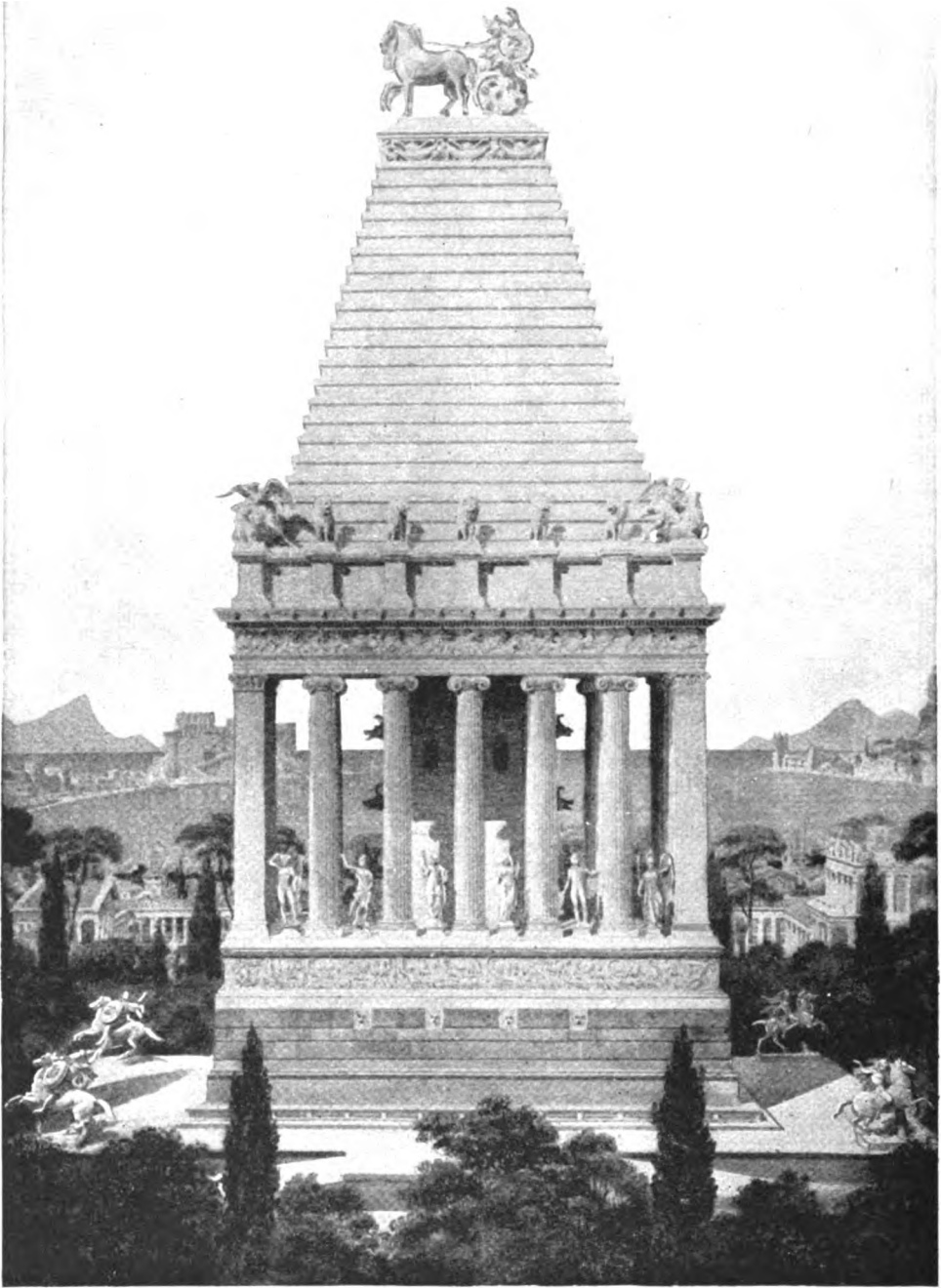
We shall see on our trip not only what we have already seen at a number of our museums — but the clever workers themselves. Naturally, they will find things Western as new and strange to their eyes as things Japanese have seemed to us. Our large green meadows and tall hedges will look unusual to them, for there is little grass in Japan, and no hedges divide the small, highly-cultivated fields. The grimy rivers will be a surprise when the visitors think of the gay scenes at home, on rivers and lakes near great cities on summer evenings. The number of horses will seem unusual, for there are but few, and those small, in Japan. It will puzzle them at first to see planing and sawing done in the opposite direction to their own way, and screws and keys also acting on the rule of contrary. And what will they think of our high houses?



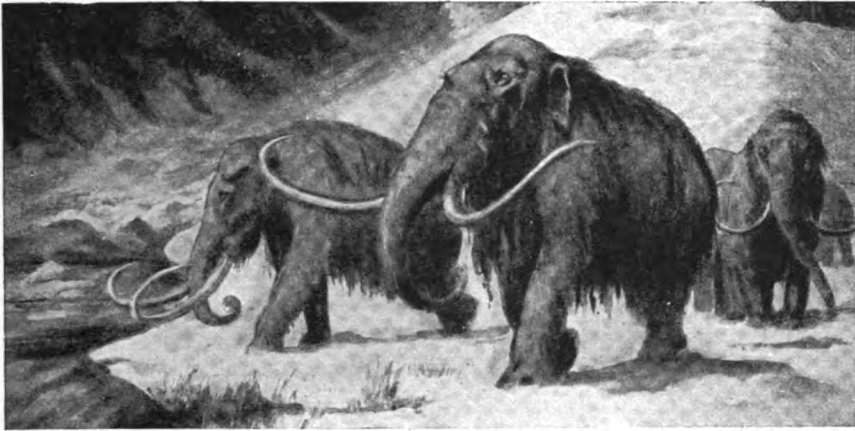
SCENE ON THE SEA OF JAPAN

THE NEXT STORY OF COUNTRIES IS ON PAGE 566.

# THE WONDERFUL TOMB OF KING MAUSOLUS



THE FIFTH WONDER OF THE WORLD AS IT PROBABLY APPEARED IN THE DAYS OF ITS GLORY When Mausolus, the King, or Prince, of Caria, died, his widow, Artemisia, decided to erect over his remains the most magnificent tomb that the world had ever seen or should ever see. She employed some of the most famous sculptors of ancient times, and although Artemisia herself died before the tomb was finished, the sculptors completed it because they loved their work, and regarded this monument as the most glorious triumph of art that the world had seen. It is from this Tomb that there arose the word "Mausoleum," which means a stately tomb.



## UNKNOWN ANIMALS

UNDER the lens of a powerful microscope a drop of water is seen to be teeming with living things. To the tiny creatures in it that drop of water is as an ocean, and to these living specks the larger forms of life in the water must seem as huge and terrible as hungry sharks in the sea are to human beings. That little drop of water looks to the eye as clear and free from life as if it had been distilled from dew upon the petal of some fair rose. That there is in it life of any sort surprises us ; that there are so many living creatures there of varying forms and sizes is almost impossible to believe until the microscope enables us actually to see them. If that bead of water holds such mysteries, what of the world in which it has so small a part ?

Let us step for a moment into the garden, and ask ourselves if that has any secrets hidden from us. There lie the lawns and flower-beds and kitchen-garden, looking solitary enough. Besides the birds there is not a living thing to be seen. We walk about the garden, and wish our parents had made us zoo keepers—a glorious life!—so that we might always have had beasts and birds and reptiles about us, instead of this tame garden with nothing in it but flowers, and fruit, and vegetables, and trees, and creepers, and shrubs. Cabbages

do not satisfy the soul when we sigh for crocodiles ; lettuces are a poor substitute for lions ; nobody would be content with a geranium when he is panting for a giraffe, or express thanks for a tomato when he yearns for a tiger.

In this discontented frame of mind we wander up to the conservatory, and sniff bad-temperedly at the flowers there. Suddenly a little voice beside us says : " Look, here are some frogs in the tank ! " Yes, there they are, merry little things, some of the four hundred frogs which we reared from the early tadpole stage in the previous year, and, to the great horror of somebody, turned loose in the garden.

There is joy in this evidence of life, and it sets us thinking. After all, is this garden such a solitude ? Are there not moles, and mice, and voles in any number beneath its surface ? Are there not more frogs in the long, damp grass of the orchard ; newts in the moist borders surrounding the glass-houses, and possibly a toad or two down in the stokehole of the furnace which warms the houses ? Why is the gardener so carefully washing the leaves of the young celery plants ? It is because the leaves are smothered with the eggs of the celery fly. The cabbages are studded with the eggs of butterflies ; the ants are busy shepherding aphides on the rose-trees. Why are the young



peas and strawberry plants so carefully netted off? To keep the mice away. Things look more lively now, and we are less ill-tempered. A great horny beetle, with a host of little ones clinging to it, scuttles across a sunny walk, and we remember that that beetle is one of a multitude of kinds which make their home in the garden. Down in the soil, we remember, there are myriads of insects and lesser creatures. Here is a garden of three acres or less. Well, in it there are quite half a million fine fat worms, all steadily at work making the soil better. And then there are myriads and myriads of microbes in the soil, all at work for their own benefit and ours; there may be as many as 400,000 to a single cubic inch of soil. Things are decidedly looking brighter. We can leave the zoo to its keepers without further regret; we have got our own little zoo at home, all round us.

That is the sort of experience that any one of us can have. We go growing into the garden as into a place of solitude, quite lacking life, and find that, though we cannot see them, there are more living things in that garden than there are

people in all the world. Now, the great zoologists feel at times as we feel. They say sadly to themselves, not that the world is without animals, but that it contains no more new animals, no animals with which they are not all familiar.

They know that they have not been able to fathom the sea, nor to classify all the insects and tiny forms of life, for that no man will ever be able to do. There are more insects, both kinds and individuals, than most of us dream. That this is so we can try for ourselves. Let us ask any of our friends which, in their opinion, would weigh the heavier—the backboneed things of the world, or the things without backbones? Ask them to imagine a gigantic pair of scales. In one side let them fancy that they put all the animals—men, elephants, rhinoceroses,

hippopotamuses, lions, tigers, all the fierce animals, all the mild-tempered animals; the whales and seals and manatees, the sharks and all the big fish and little fish, and all the birds and reptiles and amphibians—put all those into one scale. In the other, put the insects of the world. Which, let us ask our friends, will weigh the heavier? Our friends will say that the scale containing the backboneed animals will easily weigh the heavier. But in the judgment of great authorities that is wrong; the little things are so many in kind and number that they will outweigh all the rest of the life of the world put together.

In this vast assemblage there are very many still to be discovered and known. But with the big things it is different. It is as to these that the zoologist grows

sad. He has no more secrets to gain, he sometimes thinks. Then some splendid fact bobs up and kills his theory. He is not as wise as he thinks. There are more living things beneath the skies than he knows of. There cannot be very many more living things to be discovered, but not all the list of surprises is exhausted. It took



THE OKAPI, WHICH WAS DISCOVERED IN 1899  
Specially drawn by Sir Harry Johnston

years and years to find the little mosquito which carries disease and death to our countrymen who go out to tropical climates. The mosquito was there in abundance, but the brave men who were devoting their lives to the pursuit of it could not know that the mosquito was at work when they slept, and that when the men were awake the evil insect retired to rest. That is a little instance of the way in which members of the great animal kingdom succeed, age after age, in escaping the notice of man.

Think of it—for thousands and thousands of years Africa has had a beautiful animal called the okapi, yet up to the present moment only one white man, or two at the most, has ever seen one of these animals. Until a few years back any great zoologist would have told us

that he knew of all the animals in the Dark Continent; yet here, awaiting discovery, was one of the most interesting creatures in the land — the connecting link between the giraffes and the gazelles. White men have gone specially to Africa to seek the okapi in the forest where it is known to live, but they have never seen one alive.

The manner of our learning of such an animal was in itself a little romance. Fairy books and travellers' tales have often told us of tiny pigmy men and women, but nobody believed that such people existed. Dwarfs there have been in plenty, but no one believed that there really existed tribes of people whose chief distinction it is to be small.

But such men and women have been discovered in the heart of Africa, and Major Powell Cotton, when he got married, took his young bride to stay with the pigmies; and the brave girl-wife dwelt in the midst of the tiny savages while her husband went off into the forest, hunting strange animals. She can never forget the wonder of these people when they caught sight of her brushing her hair. These little people were the only ones to know of this strange animal in whose existence scientists did not believe. They knew all about its habits. They knew that it eats only one particular sort of food which grows nowhere but in these forests. They knew how shy and silent and solitary it is; how the scent of a man far away from it will make it desert its feeding-grounds and fly for safety deep into the dense undergrowth, where not even the pigmies can follow. But the little men knew that there are moments when they can steal up to it, and inflict a deadly injury with the poisoned arrows which they use. These

were the little people who instructed our wise and daring scientist-hunters that the wise men of England have not yet learned all the secrets of Nature.

It is worth remembering, too, that this same traveller of whom we have been thinking stayed some time with cave men and women in Africa. He found men and women and children living in tribes of three or four or five families, clad in skins, and making their homes in rough caves, living exactly as our forefathers lived in savage old Europe, when the mammoth and the hyena and the cave bear were there to share the land with them. These facts help us to realise that not every vestige of the old, old world has yet passed; that there are things still for us to see and know — animals in the wilds of which we had not heard; tiny men and women in the forest like the pigmies of the story-books; men and women in caves like the ancient Britons; men and women and children and domestic animals amid the eternal ice and snow, living just the lives which men and women lived in the Ice Age.



MRS. POWELL COTTON

Who lived alone with the pigmies in the heart of Africa.

Facts like these make the thoughtful student wonder whether there are not in the world still more relics of the past which, hiding in the wild, untrodden ways of mysterious lands, have not yet been seen by hunter or traveller. They cannot but wonder if the so-called extinct monsters really all died out, or whether there may not still be some survivors. Scorpions exist to-day in much the same form that they have had since scorpions were first created.

The duckbill, that wonderful animal with furry body, bird's bill, and paddle-like feet, with which it can swim in the

water and burrow on dry land, lives to-day in Australia, unchanged from the form in which its ancestors, which were among the first of all animals, originally appeared. It took years and years to make men believe the stories which the natives of Australia told of this remarkable egg-laying animal; and when at last a white man found the duckbill, and learned the whole story of its life, he cabled home the news, and had it sent from England on to Canada with as much excitement as if a new continent had been discovered.

Then we have the tuatera, a lizard living in the islands off the north-east of New Zealand, which has remained unchanged through ages since it first took its present form. Other lizards have changed enormously, but not the tuatera. There is a greater difference between the tuatera and the ordinary lizard than there is between the ordinary lizard and the serpent. The tuatera is the one creature on earth which still has three eyes. On the top of its head, under a fold of skin, making it useless, there lies that third eye which all animals are said to have had at one time. In the young this can be clearly seen through the skin.

Now, inquiring naturalists say to themselves: "If these two creatures, together with the echidna, or spiny anteater, another practically unchanged animal, can have lived unaltered through all these millions of years, are there not some other animals still alive surviving from the old days?" And, believing that there is something in the theory, they go, or send men, into the wilds to prove the truth of the question. One of the most exciting chases was one undertaken a few years ago to find the giant sloth of Patagonia. It had a body as

big as an elephant's, and when it sat up on its mighty hind legs to pull down a tree-top to eat, it was fourteen feet high. These giant sloths were the animal lords of South America at the time when the mastodon and mammoth lorded it over North America. We cannot tell why they died out. One belief is that the enormous number of guanacoës, camel-like creatures which abounded in America, by constantly biting off the young shoots of trees, killed all the forests in which the sloth lived. Goats killed the trees of all the hills of Greece and the plains of

the Mediterranean countries, making all barren. Guanacoës may have done the same for that part of South America in which the sloths lived. That, however, would not explain the disappearance of the horse. There were once myriads of horse-like animals in South America, but when the first white man landed there, there was not a horse in the whole continent. These are mysteries for which we cannot account.

Anyhow, naturalists sent out an expedition, fully believing that somewhere in the remote parts of South

America the giant sloth still exists. The expedition was not successful; but we now know that the great monsters lived in caves with men, and that men and women and children made pets of them; for after all these ages we find the very grass which the men cut for the sloths turned into withered hay, in the caverns.

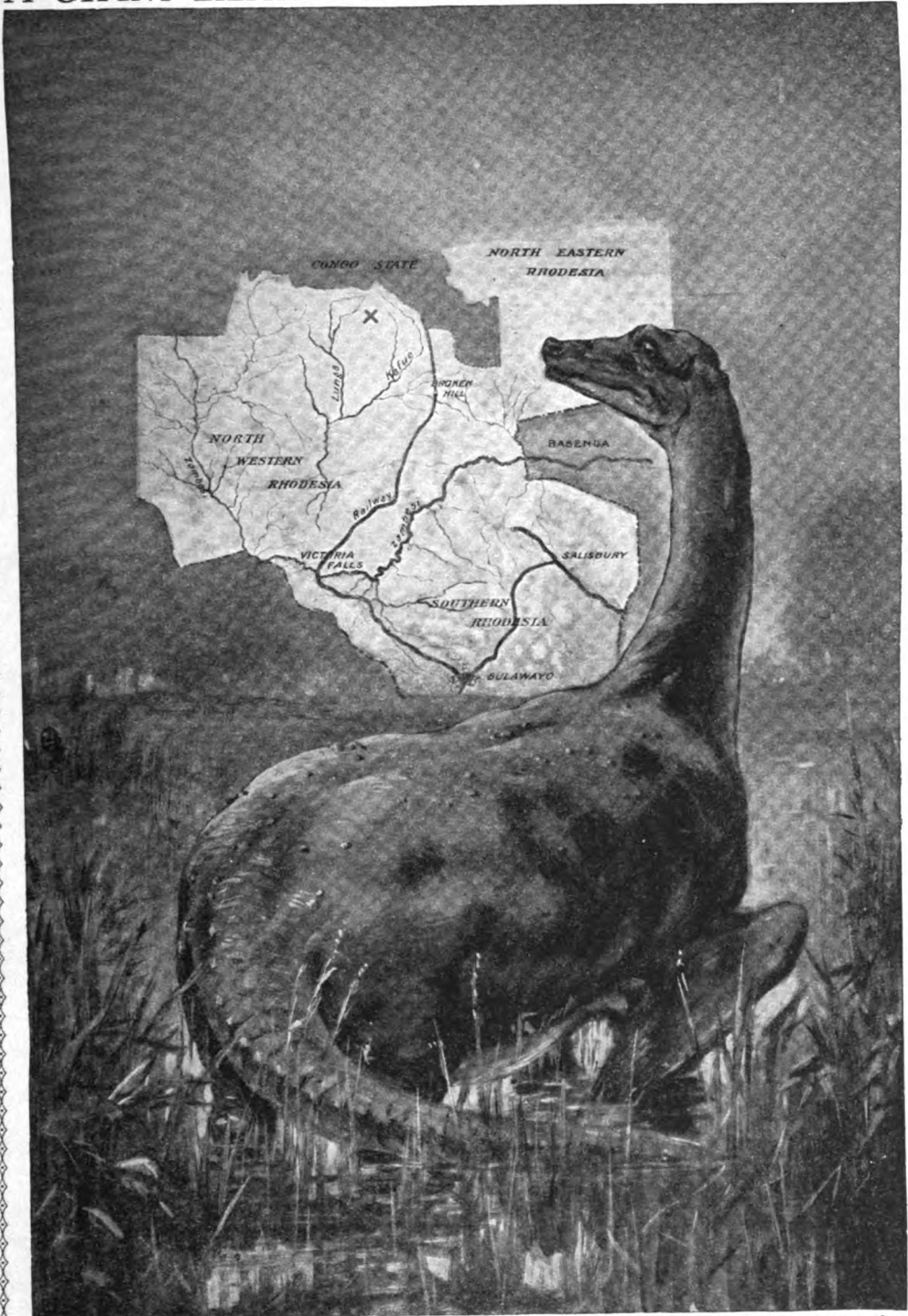
We got all our news about new animals from natives, therefore we are bound to pay attention to stories which come again and again to us from natives occupying quite different parts of the same country. The natives' tales of pigmies and cave men, of the okapi and of the duckbill,



THE GIANT SLOTH

A few years ago a band of British hunters went to search for this monster in Patagonia, but were unable to find it.

## A GIANT LIZARD THAT MAY BE LIVING TO-DAY



The African natives are very emphatic in their stories of a fearful creature, half elephant and half dragon, that inhabits the huge swamps of Northern Rhodesia, and Mr. Carl Hagenbeck, the great European importer of wild animals, believes that some creature like the prehistoric brontosaurus really lives in these dismal and lonely swamps. This picture shows what the brontosaurus was like, and the cross on the map marks the place where it is supposed to live. See page 18. The word brontosaurus comes from two words that mean thundering reptile.

were long disbelieved; but, as we have seen, they were true. This fact weighs with the men who believe that there may be truth in the marvellous stories which are told of a fearful monster living to-day in the swampy heart of a great part of Africa, called Rhodesia. The story was first heard from natives in Africa a good many years ago by a trustworthy traveller named Menges. It came up again a few years ago when Mr. Carl Hagenbeck, the greatest importer of wild animals in the world, received two different reports to the same effect. One of his own hunters, who had been in Rhodesia in search of animals, heard of it; and an English traveller, who had entered and left Rhodesia by a different route from that taken by Mr. Hagenbeck's representative, also heard of it. The natives describe it as a huge monster, "half elephant, and half dragon," dwelling in the great swamps in the interior, which are hundreds of square miles in extent. There are drawings of such an animal in certain caves in Rhodesia; which suggests that the natives either have wonderful imaginations, or have actually seen such a creature. We know that in olden times they made drawings on stone and ivory, and on the walls of their caves, of reindeer, bears, mammoths, and other animals then living, and we find skeletons of the animals they drew, mingled with the remains of the men who scratched the pictures on the walls and on ivory.

Mr. Hagenbeck firmly believes that such an animal as this monster does exist to-day in the great and silent swamps of Rhodesia, and he sent an expedition to hunt for it. The hunt failed, for the men were laid low by terrible fevers, and attacked by blood-thirsty savages. Although he failed on this occasion Mr. Hagenbeck, in a book

that he has written, called "Beasts and Men," says that he hopes yet to prove that this animal does exist. He thinks it must be like the extinct brontosaurus. This was an animal 65 feet long, and weighing over 35 tons. It fed on the vegetation of swamps, and lived half in the water and half on land; which, of course, is just the sort of life that would be led by this monster of which the Rhodesian natives tell to-day.

There are those who hope that some day we shall find that the quagga, that relation of the zebra which is supposed to have become extinct quite recently, is not dead; that somewhere or other two or three lurk secure and unsuspected by the deadly hunters.

Men still go wearily seeking the moa, the giant bird of New Zealand, fully believing that the natives are right when they say that here and there, in the heart of the New Zealand mountains, these feathered giants still live. The same hope animates those who believe that somewhere in the less frequented islands of the Indian Ocean a dodo or two may linger in safety. Perhaps the most



THE TAKIN, NOW IN THE LONDON ZOO  
A creature from Tibet, was unknown until recently  
This photograph is by W. P. Dando, F.Z.S.

romantic faith of all is that of the men who hold that the mammoth still exists in the North. Indian hunters from time to time bring back reports that far up in Alaska, almost at the coast of the Arctic Ocean, a solitary herd of mammoths still lives and flourishes. New things do come to light. It was only the other month that Europe saw for the first time a takin, an animal which comes between the goats and the antelopes. The animal is too big, one would have thought, to have escaped attention. It is  $3\frac{1}{2}$  feet high at the shoulder, and has great horns, with which it can kill a man; but because its home is mysterious Tibet, a land into which it has been dangerous for Europeans to go, it has been regarded as having no existence.

THE NEXT STORY OF NATURE IS ON PAGE 561.



## WHY DO WE WORRY?

CONTINUED FROM PAGE 5486.

**W**ORRY is a state of feeling, and, as everyone knows, it may be aroused by many causes, real or imaginary. Yet this is a question well worth answering, because it helps to teach us a great fact about ourselves. If we think about worry and observe ourselves, we shall notice that we do not worry about the present. We worry about having to go to the dentist, but when the tooth is actually being drilled we do not worry, though we may fear. Worry is perhaps fear, but it is always about either the future or the past, usually the future.

A creature, then, that lives entirely in the present cannot worry; but all creatures except ourselves live in the present, and babies and very small children live in the present, too, so they cannot worry. The great and grand mark of man, however, is that, as Shakespeare said, he is "made with such large discourse, looking before and after." It is this power of "looking before and after" that makes worry possible; and, therefore, just as worry cannot happen in cabbages or animals, or even in infants or two-year-olds, so it is *most* liable to happen in the highest types of human being, who have most imagination and live least in the present, and most in the future and in the past.

This power of mankind by which we are aware of ourselves, and can figure ourselves in the past and in the future, is called self-consciousness, and is, above all things, that which

distinguishes us from all other creatures in the world. And worry, as we have seen, is one of its consequences.

### WHAT IS A THERMOS FLASK?

A thermos is a flask that keeps a hot liquid hot for a very long time. Thermos is simply the Greek word for heat; but it is really not a particularly good name, because, though it keeps a hot liquid hot for a long time, it also keeps a cold liquid cold. That fact really gives us the key to what happens, if we have right ideas as to what heat is. Heat is something, and cold is only the absence of heat. Therefore, when this little instrument keeps a hot thing hot, it must, somehow or other, be keeping the heat in, and when it keeps a cold thing cold, it must somehow be keeping heat out.

Now, we know perfectly well that a flannel blanket, for instance, acts in just the same way. It will keep a hot thing hot because it keeps its heat in, and it will prevent ice from melting because it keeps heat out. It does these things because it is a bad conductor of heat.

A thermos flask, then, must somehow be a bad conductor of heat. Between the outer and inner walls there is a space which is full, as far as possible, with simply nothing. If there were air there, in the usual quantity, it would readily conduct the heat from inner wall to outer wall, or in the opposite direction, but the flask is so made that there shall be as little air in this space as possible, and so there is very little



to carry heat across. A blanket is more like a great gate set up through which the heat cannot get in or out, but the thermos flask is more like a moat or ditch over which the heat cannot jump in or out.

**DOES WHISKY MAKE PEOPLE WARMER?**

This is one of the most interesting cases, of which the world is full, where the true answer to a question is just the opposite of what people think it to be. In every part of the civilised world men are still to be found who tell us that they drink whisky to keep out the cold, and this seems to be a specially sensible thing to do when one is going out into the cold night air from a warm room. People judge in such a case by what they feel, and indeed there was no other way of judging fifty or sixty years ago. It is certain that whisky makes a man feel warmer, and if he *feels* warmer he naturally thinks and says that he *is* warmer.

Yet, in fact, he is cooler. This can be shown nowadays by means of the little thermometers which doctors first began to use thirty or forty years ago, and which tell not the temperature of the skin, which matters nothing, but the temperature of the blood, which matters everything. The thermometer shows that after drinking whisky a man's blood gets colder, and so the man's body, as a whole, is colder, though for a time his skin feels warmer, and indeed is somewhat warmer.

**WHAT HAPPENS WHEN A MAN DRINKS WHISKY?**

When a man drinks whisky, the whisky causes a large quantity of blood to pass quickly through the blood-vessels of the skin. This means that the skin is made warmer, and as the nerves of heat end in the skin, we are deceived and say that we are warmer. But really we are cooler, because the warm blood, exposed in large quantities at the surface of the body, rapidly loses a quantity of its heat to the outside world. This is only one of many instances where we are deceived by the surface of a thing, and the thing in this special case is our own body.

**WHY DOES MILK TURN SOUR?**

The change that takes place in milk when it turns sour is entirely due to the growth of microbes in it. If the milk is boiled, and then sealed up in something, it will not turn sour in any weather nor in any length of time, because all the microbes in the milk, including those that turn it sour, have been killed by

the boiling. Much warmth and electricity in the air to which milk is exposed favour the growth of the microbes in the milk. Microbes are plants, and we know that warmth and electricity in the air favour the growth of other plants, such as wheat or potatoes.

The stuff in sour milk which gives it its sour taste is an acid, of course, and it has the special name, which everyone should certainly know, of *lactic* acid, which simply means milk acid. It is made by microbes from the sugar in the milk, which has the corresponding name of *lactose*. Lactic acid is not bad for us, but good for us; and if good, clean milk turns sour it is none the worse for that, but in some ways, and for some people, it is much better than is milk as we usually drink it. Milk that has turned sour is highly recommended by many doctors for curing certain diseases.

**WHY CAN BABY ANIMALS WALK SO MUCH SOONER THAN HUMAN BABIES?**

A great book might be written about this wonderful question. One of the answers to it is that there is to some extent a proportion between a creature's length of life and the length of time it takes to grow up. We should expect the growing-up process to be quicker in the case of an animal that is very old at fifteen than in the case of a creature that may live to be a hundred or more years.

But this fact does not nearly account for the extraordinary difference in the rate of development of babies as compared with the lower animals. There must be some other principle at work. Part of the explanation is that in the highest types of animals we find that the young creatures are much more dependent upon their mothers, and for a much longer time, than are the lower animals. This is true if we compare birds with reptiles, or horses or dogs with fishes, or even with rats and rabbits. It is far more true when we compare ourselves with the lower animals.

Now, at first it seems surprising that the highest kinds of creature should be less capable when they are born than lower kinds. But if we compare man with, say, a dog, we shall see the reason. A dog, because it is much higher than a rabbit or a fish, can learn a little; but most of what it does it does by instinct, and instinct requires no teaching. A man has instincts too, but the great

mark of him is that he is intelligent ; and though intelligence can learn everything, it has everything to learn. The baby is born knowing nothing, but with endless powers of learning, and that is why it takes so long to do things.

**WHY DOES A BIRD FORSAKE ITS NEST IF ITS EGGS ARE TOUCHED ?**

The whole meaning and purpose of the bird's nest is to be found in the eggs. The eggs exist for the future of the bird race, and the nest exists for the sake of the eggs. If the eggs are stolen, then the instinct which made the bird build the nest is disappointed, and we cannot be surprised that the bird deserts her nest.

But sometimes it may be that, even though some or all of the eggs are left, the bird may forsake her nest if it has been touched. In such cases we can only guess what really happens.

It may quite possibly be that, when the eggs have been handled, the bird is aware of a strange scent in the nest, and this "puts her off," as we say. She feels that something is wrong, and she loses heart and goes away. But such a question could only be answered for certain by making many careful experiments, which would not be kind.

**IS IT TRUE THAT GREEN WALLPAPER POISONS US ?**

It is true that some kinds of green wallpaper used to be capable of poisoning people, but probably no paper of that kind is allowed to be made now in any civilised country. Green is not one of the easiest colours to obtain, even though so much of Nature is green, for the green dye of plants will not remain the same for long, and it soon changes its colour completely.

Therefore, at one time certain green salts of arsenic were used to die wallpaper and other fabrics. But arsenic in all its forms is one of the most deadly and horrible of poisons, being poisonous, indeed, to every kind of living creature.

**WHAT IS VERDIGRIS ?**

Verdigris is the rather curious name of a particular salt or compound of the element called copper. It is a compound between copper and the acid called acetic acid, which is the acid that gives its taste to vinegar. So, in the language of chemists, verdigris is the acetate of copper. Copper is, under certain

conditions, a poisonous metal, and so many people are very much afraid of verdigris when they see a film of it on copper taps, for they think they might be poisoned through drinking the water that comes from the taps. But verdigris is not nearly so poisonous as that, though no doubt it is better to keep taps clean. It has a very brilliant green colour, as we might guess if we look at the first four letters of its name, which are the French for green, and which we see in such words as verdure and verdant.

**IF WE COULD GO ON TRAVELLING UPWARD, WHERE SHOULD WE END ?**

The word upward has no real meaning. The earth is a round ball. Upward simply means away from the ball, and we might therefore make a continuous upward journey from any point of the earth's surface, and the result would be different in every case. The upward journey from any point would, for instance, be in directly the opposite direction to the upward journey from another point exactly on the other side of the earth. For every point on the earth's surface plainly must have a point exactly opposite it, and the point opposite any other is called its antipodes, a word which means opposite the feet.

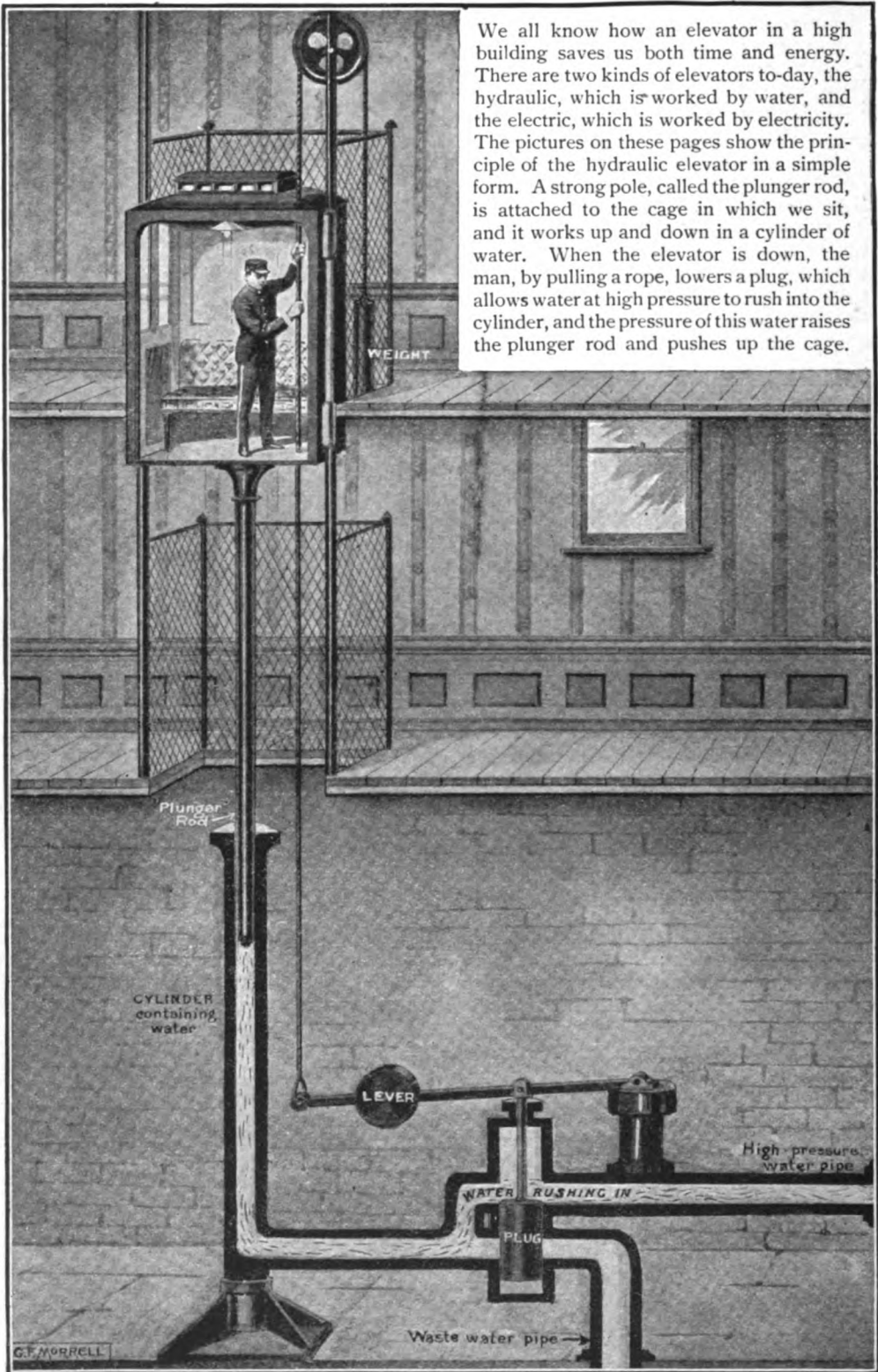
But suppose we make our question more manageable by thinking of only one point, anywhere on the earth's surface, and then asking what would be the end of a continuous upward journey from that point. Then time comes into the question, for the line of the journey would never be the same in any two seconds of time, in consequence of the various motions of the earth. But suppose we fix on a place and on a moment of time, the answer, whatever the place and the moment, will be the same—that such a journey would have no end, for we cannot imagine that space has any end at all.

**IS IT GOOD TO HAVE TO WORK ?**

Work is a thing we all tire of at times, and we all enjoy the hour when we can stop working. We look forward to our holidays ; we don't like having to get up in the morning ; and we wish someone would leave us a fortune ; and yet, if we have any sense at all, we know in our hearts that our work is good for us, and we see every day around us the consequences that follow when people, even those who have plenty of money to amuse themselves, have no work to do.

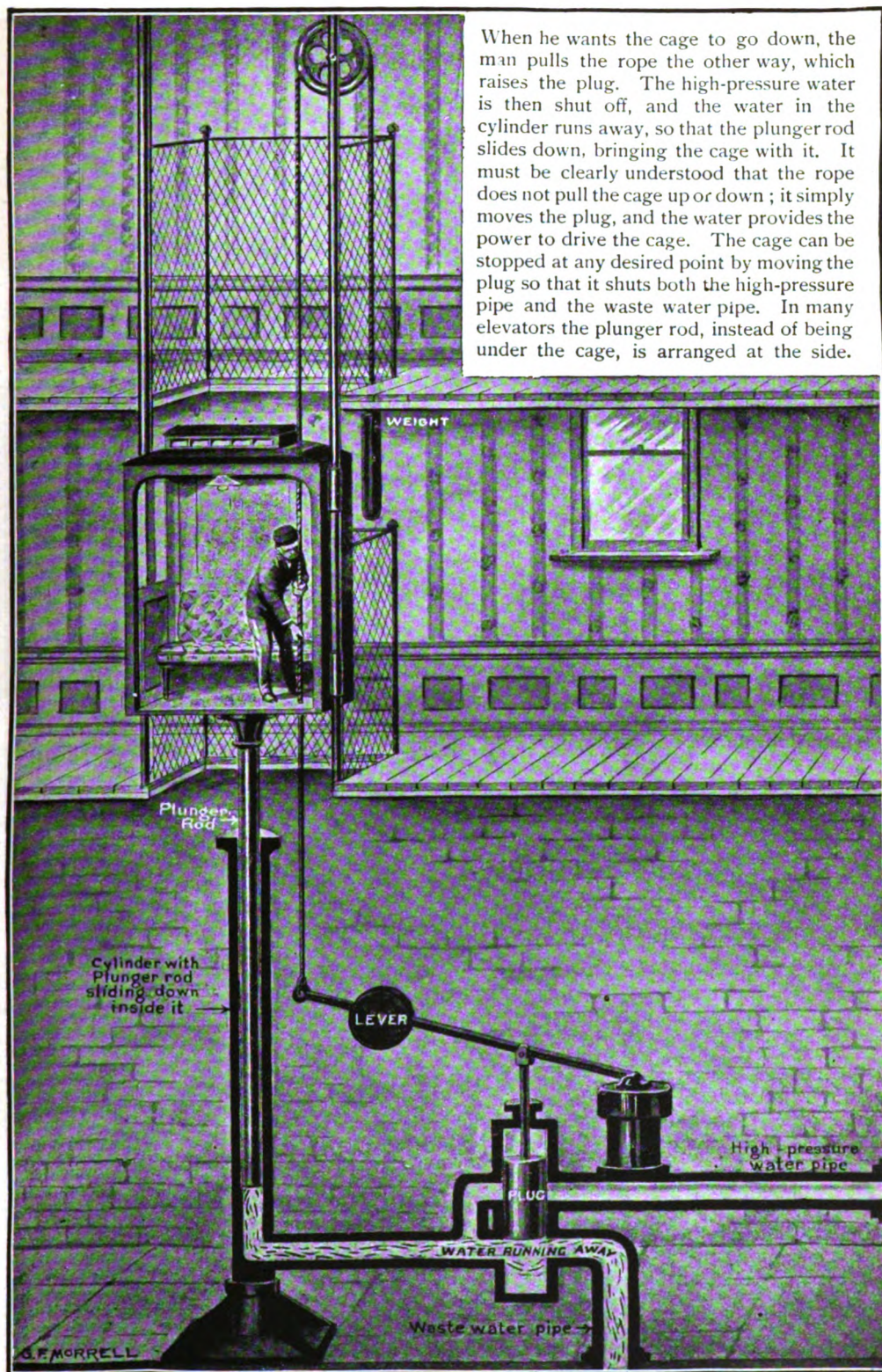


# HOW AN ELEVATOR GOES UP AND DOWN



# WHAT A PIPE OF WATER CAN DO

When he wants the cage to go down, the man pulls the rope the other way, which raises the plug. The high-pressure water is then shut off, and the water in the cylinder runs away, so that the plunger rod slides down, bringing the cage with it. It must be clearly understood that the rope does not pull the cage up or down; it simply moves the plug, and the water provides the power to drive the cage. The cage can be stopped at any desired point by moving the plug so that it shuts both the high-pressure pipe and the waste water pipe. In many elevators the plunger rod, instead of being under the cage, is arranged at the side.





There are two classes of people with money—those who find some work for themselves, in spite of their money, and those who do not. The first are probably happier for their money; it need do them no harm, and may do them much good. But those who find no work to do are always the worse for their money. Human beings must have occupation and a purpose in life, or their lives are worth less than nothing, both to themselves and to other people.

**IS IT NECESSARY FOR ALL LIVING CREATURES TO WORK?**

It is not true of some of the lower forms of life, as, for instance, such cold-blooded creatures as lizards, that work is necessary to them as it is to man; it is natural to them to do nothing. They do not get bored, and their bodies do not get soft and poor, and they do not eat and drink more than is good for them. But the great mark of human beings, and especially of the highest kinds of human beings, is that they are made, in every bone and cell and impulse, to do things, to form purposes and carry them out.

When a man who has worked hard all his life retires, and is so unlucky as not to find any good hobby to work at instead of his ordinary work, and so has nothing to do, he soon discovers that all play and no work is just as bad as, or worse than, all work and no play.

**WHY DOES SUGAR DISSOLVE QUICKER IN HOT WATER THAN IN COLD?**

This sounds a very simple sort of question, which anyone ought to be able to answer, but, in point of fact, it is extremely difficult, and no one can answer it. We can only study the facts and hope that those who come after us will be able to add to them from the greater knowledge that they have gained, and find out the answer at last. The main fact, we know, is that what is true of sugar is true of almost everything. If it were true of everything, the case would be simpler, but there are a few things which will dissolve in cold water and not in hot water. These very curious exceptions make it all the more difficult for us to answer this question, but if only we knew more about it, we should doubtless find that they really furnish the very key to the answer.

We can see how difficult such a question as this must be when we ask ourselves what really happens when anything

dissolves, or melts. If we could answer that, no doubt we could explain how different conditions affect the melting.

But how can we expect to do so while we cannot yet answer the first question—what happens when sugar melts? We know that the sugar disappears; we know that it is not gone, for we can get it back, and the water containing it is heavier by just the weight of the sugar that is melted in it. But what state the sugar is really in when it has melted we cannot say, for, of course, it is far beyond the range of our seeing.

When water is hot it takes up more room than when it is cold, and we must suppose that there is more room between the molecules of it. This should mean that there is more room to hold the molecules of sugar; and that is perhaps the best sort of a guess that we can make in answer to this very difficult question.

**WHY DOES A PLANCHETTE MOVE WHEN WE PUT OUR HANDS ON IT?**

The answer to this question is the same as would be the answer to the question why one person holding another person's hand can do what that other person is thinking of, without a word being said. If we have things in our minds that suggest motion or that can be expressed through any kind of muscular motion, as in going to a certain place, or in speaking, or in writing, our muscles are affected without our knowing it, by our thoughts.

We may be making no act of the will, and are quite unconscious of what is going on, but the mere fact that we have a certain thing in our minds, such as the idea of moving across to a certain part of the room, or the idea of the letters that form a certain word, is all the time affecting the muscles by which we should give expression to that idea if we chose to.

Thus, one person, without any very strong will of his own, merely by firmly keeping an idea in his head and thinking steadily of it, can make another do quite complicated things, and thus also a thing like a planchette is liable to move when we put our hands on it.

The key to all these cases is to be found in the automatic muscular movements, as they are called, of which we are, as a rule, quite unconscious, and which produce no effect upon our minds, but which are really of the greatest importance and are in constant use.



## WHAT CONFUCIUS THOUGHT

**W**E must now study the greatest of all Chinese thinkers, whose name is revered to-day by at least one-fourth of all mankind, and who is one of the greatest teachers of wisdom that the world has ever seen. The real name of this great thinker is Kung; but when he grew up, and came to be revered as a great teacher, the Chinese called him Kung the Master, or, in their language, Kung-fu-tse. Long ago this title was turned into a Latin shape, and rendered Confucius, the name by which this great man is known throughout the western world, and the name by which we shall call him. But we must not do so without knowing that it means Kung the Master.

Just as the religion founded by Buddha is called Buddhism, so the teachings and the ideas of Confucius, making a religion of a kind, are called Confucianism. When we study Confucius as one of the great thinkers of the past, quite as far back, indeed, as any great thinker whom we have yet named, we must not make the grave mistake of supposing that we are reading about something which is really past and only ancient history.

Confucianism is a great living fact of the world of to-day; it is believed by, and it partly rules the doings of, one-fourth of all mankind. These people who believe in Confucius and his ideas are not weak people, nor people who are dying out, nor stupid people. They are probably as clever as any other men are or have been; they are multiplying very rapidly; they are

very strong and hard-working; and they and their deeds and beliefs are quite certain to play as large a part in the future of the world as those of any other people. It is well to understand this when we study the great thinker called Confucius.

Thoughts are the master of things, and the thinkers are the masters of the doers; and the Chinaman Kung, born about 2,500 years ago, was not only a great thinker then, but is at this hour, and will be when we are gone, one of the great living powers that make the world what it is and what it will be. There is something shameful in the ignorance, not of children, but of grown-up people who are supposed to be educated, and who take upon themselves the duty of deciding what our children shall learn, but in whose eyes the great Confucius is nothing but a dead man much thought of by a number of yellow heathen somewhere. We know that the law of gravitation governs and helps to make the world what it is and will be, and so do the laws of chemistry, and the laws of life and death; and we are foolish unless we study and recognise the great powers such as these which make the world as it is.

One of these powers is the Chinaman Kung; and if he had never spoken a truth, or if every doctrine of Confucianism were false it would, still be our business to concern ourselves with what is the rule of life for one-fourth of all mankind. Confucius stands out as the greatest person of

the largest empire in history; and here, in the words of a well-known student, is an account of the honour with which he is now regarded.

"His name is held in the highest honour in the whole Chinese Empire, from the highest in the land to the lowest peasant. In every city there is a temple erected at the expense of the Government for his worship. This temple contains either a statue or a tablet on which his titles are inscribed. In a hall at the rear of the chief one are tablets to certain of his ancestors and others, and also to his chief disciples. The building is generally the most conspicuous in the city, its walls being painted red. Every spring and autumn worship is paid him there by

the chief officers of the city, and offerings of the fruits of the earth are set forth before him, and incense burnt. The emperor himself is required to attend in state at the Imperial College to perform these functions. Twice he kneels, and twice three times he bows his head to the ground.

"In every school in China worship is paid him, by master and scholars, on the first and fifteenth of each month, on the day of his birth, and at the opening and closing of school each year. In every village school his titles are written on red paper and affixed to the wall; and the characters on the paper mean, 'The shrine-tablet of the most accomplished, holy, first and most eminent teacher, Kung.'"

## THE LIFE OF CONFUCIUS

CONFUCIUS is believed to have been born in the year 551 B.C. His father was a distinguished soldier, and, according to the Chinese, he was descended from the great emperor who, two thousand years before, had founded the Chinese Empire. When the little boy was only three his father died; and we know very little about his early education except that, according to himself, he became devoted to learning at the age of fifteen.

As is the Chinese rule, he married very young, and was a father at twenty. Soon afterwards he became an official, but spent all his available time in studying history and in thought, since he was far from satisfied with the state of things in China, and wished to learn how to reform the State, and, above all things, to serve the moral welfare of his people. At thirty he was famous, and had pupils of high rank from every part of the country.

He became what we might now call Minister of Crime and Chief Judge in his part of China, and it is said that he very nearly put an end to crime altogether. We know, however, that he did order at least one execution, but he was very much opposed to the execution of people to whom the State had not done its duty in their youth; and when a follower asked him how good government was to be obtained, he said that we must beware of the "four evils," the first of which was "Omitting to instruct the people, and then inflicting punishment on them—which means cruel tyranny."

After two thousand five hundred years we are just beginning to learn in America that Confucius was right.

Hitherto we have terribly neglected our young boys and girls just after they left school, and then, when they did wrong, have punished them cruelly, usually with the result of confirming them in wrong-doing. But this, as Confucius said, is cruel tyranny; and in such matters as this we are beginning to follow the principle laid down by the Chinese Minister of Crime who lived over two thousand years before Columbus discovered America.

We also know that, as a judge, he had a great principle which is followed by the wisest of the judges in our land to-day whenever people are wise enough and fair enough to let them. "In hearing cases," said the Master, "I am like other men, but the great point is to prevent them coming into court." When people quarrel nowadays, wise judges try to have the thing settled out of court; and wise and honourable lawyers, even though they know that this course will bring them least money, always try to settle things without people going to law.

But, as in a thousand cases since, and doubtless in a thousand before—if the records were not lost in the mists of time—Confucius was too good and wise and honourable a man to be loved by all, and he had many powerful enemies, who got up an underhand plan for encouraging the prince whom Confucius served to do a disgraceful thing which stopped public business, and so utterly disgusted Confucius that he resigned his post. He started travelling, and for many years went about from one state to

another throughout China with his few disciples, sometimes welcomed, often jeered at as a "stray dog," and everywhere, sooner or later, disappointed. He was always ready to advise the rulers whom he encountered, and even to help them to govern on his own high principles—but he was so great and good, and met with little encouragement. But his disciples were very faithful and were a great comfort to him, and he loved them dearly.

After many long years, when he was not far short of seventy, he returned to the State of Lu, in which he had governed, and he was allowed at Court, not as an official, but as a person who might occasionally be consulted. There he spent the last five years of his life in writing, but, as we have seen so often with these great men of long ago, none of his own writings have been preserved, and we have to trust to his disciples for our knowledge of his teaching. Here is a translation of the Chinese account of his death, which occurred in his seventy-third year:

"Early one morning he got up, and, with his hands behind his back, dragging his staff, he moved about by his door, crooning over:

The great mountain must crumble;  
The strong beam must break;  
And the wise man wither away like a plant.

"After a little, he entered the house, and sat down opposite the door. Tsze Kung had heard his words, and said to himself: 'If the great mountain crumble, to what shall I look up? If the strong beam break, on what shall I lean? If the wise man wither like a plant, whom shall I imitate? The Master, I fear, is going to be ill!' He then hastened into the

house. The Master said: 'Tsze, what makes you so late? Last night I dreamt that I was sitting with the offerings to the dead by my side between the two pillars. Intelligent kings do not arise, and what one under Heaven is able to take me as his Master? I believe I am about to die.' With this, he took to his bed, was ill for seven days, and died."

The best translator of the works of Confucius, Dr. Legge, adds the following words in beautiful comment upon his death:

"His end was not unimpressive, but it was melancholy. He sank behind a cloud. Disappointed hopes made his soul bitter. The great ones of the empire had not received his teachings. No wife or child was by to do the kindly offices of affection for him. Nor were the expectations of another life present with him as he passed through the dark valley. He uttered no prayer, and he betrayed no apprehensions. Deep-treasured in his own heart may have been the thought that he had endeavoured to serve his generation by the will of God, but he gave no sign."

His end was not so tragic as that of Socrates, about whom we shall soon be learning; yet it belongs to the same class, and teaches us that the very greatest of men are commonly despised by their own time, and seem to have failed. Confucius, indeed, declared at the end that his life had been a failure, that he had not succeeded in his aims and ideals; but in all such cases, of which the history of thought is full, we ought to remember the words of George Eliot:

The greatest gift the hero leaves his race  
Is to have been a hero. Say we fail!—  
We feed the high tradition of the world;  
And leave our spirits in our children's breasts!

## WHAT CONFUCIANISM MEANS

CONFUCIANISM, as we have seen, is the name of the religion founded by Confucius. Since it is followed by an enormous proportion of all mankind to this very day, and shows no signs whatever of disappearing, we must learn something about it. As we shall see when we come to quote the words of Confucius himself, he did not concern himself at all with teaching about God and the future life. He was not at all a spiritual teacher in that sense, but rather a very practical one, dealing with this life and this world. We cannot say that Confucianism stands on the level of

Buddhism, for instance, which, as we have seen, takes a man and asks him where his soul is going, and tells him to train it for the future. Confucius did not try to do this at all, but he concerned himself with teaching men how to live here and now. He believed in deeds, not words, and was much less concerned with what a man believes than with what he does.

He taught that goodness is worth while for itself, and also because it is the "best policy." But goodness was certainly not the best policy in that sense for himself, and we must accept with caution the idea that goodness "pays" in this life.



Nor did Confucius use any promises or threats as to a future life. Offering no future rewards or punishments, Confucianism simply teaches that men are to do good without any such motives. Confucius seems to have believed that men are born naturally good, and that their business is to keep themselves so. By following the laws of his own nature, and preserving himself from evil, a man, he said, may become "the equal of Heaven." The doctrine of Confucius, then, we are to say, is one of teaching goodness, but can scarcely be called a religion in the proper sense of the word.

Yet in a very old sense of the word Confucianism must be called a religion, because religion really means something that binds people together; and if ever there was something to bind a nation together, and make it endure, that thing is Confucianism. Above all things, Confucius insisted upon duty to parents; he was never tired of talking of this duty. In his own words it consists in "not being disobedient, in serving the parents when alive according to right conduct, when dead, in burying them according to right conduct, and in sacrificing to them according to right conduct." We may quote for ourselves one of the Ten Commandments of Israel, "Honour thy father and thy mother, that thy days may be long upon the land which the Lord thy God giveth thee." This is really the central practical doctrine of Confucius. It is now one of the roots of the Chinese character, and it is far more strictly observed and followed than any other doctrine whatever. Here, as many wise people have supposed, we have the key to the age-long endurance of the Chinese, who were a great and civilised people ages before a single person in Europe could read or write; who have seen one great empire after another, like Greece and Rome and Spain, come into being, and disappear; and who still endure to-day, and are waking again after a long sleep, which was sleep and not death.

If a nation is to go on, everything depends upon its parents and its children. The great doctrine of Confucius that parents are to be honoured is therefore a thing which binds a people together and makes them strong and lasting.

When we study the oldest practices of men, we find, in varying degree in all times and places, something which we may generally call ancestor-worship. The rudest savages, we find, will make offerings to the spirits of the dead. Very often ancestor-worship has foolish and wicked things in it. For instance, men believe that the dead are evil spirits; and often in ancestor-worship the living are killed to honour or to please the dead. All that is horrible. But what we may say of Confucius is that he took the old ancestor-worship which, in one shape or another, is common to mankind everywhere, and he purified it, made it good and beautiful and practical, and took away from it the bad and evil parts that had disfigured it.



CONFUCIUS

And so the days of the Chinese have been long in their land, and in that sense they have fulfilled the promise given in the commandment from our own Bible. This great teaching makes the family strong; and it is a certain rule of mankind in all times and places that where the family is strong the nation is strong, and where the family is weak the nation is weak. We

must remember that, as ancestor-worship exists in China, it works in both directions. According to the Chinese belief and practice, which we must mainly trace to Confucius, parents are cared for and respected and worshipped by their children; and when they die, their children will honour them, will bury them with honour, and will protect their graves and keep them sacred. This means that children are specially precious. A man must have children. Thus all Chinese marry very early, for it is a great disaster to die without children. Thus, also, marriage and the family are greatly honoured.

We have only to think a little to understand the great value for a nation of beliefs and practices which make children precious to parents, and parents honoured by their children. Nor was this the only way in which Confucius taught people to be careful of the young, to honour them, and to pay regard to them. Just as a great Roman writer did many centuries later, he taught that the young were to be honoured, and he gave a very good reason for it. He is reported to have said the following words: "Reverent regard is due to the young."

How know we what difference there may be in them in the future from what they are now? Yet when they have reached the age of forty or fifty, and are still unknown in the world, then indeed they are no more worthy of such regard."

Here are some of the most famous teachings of Confucius on the great and all-important duty of honouring parents, and also one's brothers, those who are the children of the same parents as ourselves.

"Reverence to parents and friendly consideration among brothers are a root of the right feeling which is owing everywhere from man to man."

"Let young people show filial piety at home, respectfulness toward their elders when away from home. Let them be cautious and truthful, their love going out freely toward all, cultivating good-will to men. And if in such a walk there be time or energy left for other things, let them employ it in wise reading and acquiring accomplishments in art and in music."

"He who, after three years' observation of the will of his father when alive, or of his past conduct, if dead, does not turn aside from that father's ways is entitled to be called a dutiful son."

"Parents ought to be allowed by children to bear only one trouble, that of their own sickness."

"At the present time filial piety means merely supporting one's aged parents, but the dogs and horses they possess do something to support them also. If the children have no reverent devotion in

the matter, how are they better than the dogs and horses? Merely to work for old people, and to set meat and drink before them—that alone is not honouring one's parents."

"A son, in ministering to aged parents, may sometimes give them gentle advice. But if they do not heed it he must still show them reverent aspect, and if he has to suffer he must do so without murmuring. While his parents are still alive he

should not wander far, but if he does he should always let them know where they can find him. A son should not forget how old his parents are. He should rejoice that their years are so many, since they have lived so long, but he should be sorry also, since so few years can remain to them."

"In regard to the aged, we are to give them rest; in regard to friends, we are to show them sincerity; in regard to the young, we are to treat them very tenderly."

"What has the noble man to do with being distressed

because he has no brothers? All men between the four seas are his brothers."

There are beautiful and eternal thoughts among those which we have quoted; but we must recognise that the teaching of Confucius on these subjects was not by any means perfect, and there were some great flaws in it.

The gravest of these, beyond a doubt, is the very different level on which he places brothers and sisters. To him, and to the Chinese in general, a little girl is practically nothing. He frequently speaks of brothers and their duties, but he never



AN ANCIENT TEMPLE ERECTED TO CONFUCIUS

mentions sisters at all. The all-important thing is that a man shall marry and have sons ; if he has merely daughters it is as if he had no children at all. It is, above all, the father, rather than the mother, who is to be honoured. There is something terribly wrong about a system which places brothers and sisters on different levels, so that girl babies are despised, and very often are not allowed to live.

It has often been declared that Confucius laid down for his followers what we call the Golden Rule—that we are to do to others what we would have them do to us. This has more especially been said by those who desired to show that Confucianism reached the level of

Christianity. But when we study the actual words of Confucius, so far as they are reported to us by his disciples, we find that there is a notable difference.

In one case Confucius was asked : " Is there one word upon which the whole life may proceed ? " And he replied : " Is not reciprocity such a word ?—what you do not yourself desire, do not put before others."

But Confucius does not say that we are to do good as we would like people to do us good. He only goes so far as to say that we are not to do to other people what we would not like them to do to us. This point is worth remembering, because it is so very often referred to when people are comparing one religion with another.

## SOME SAYINGS OF CONFUCIUS

HERE are some more of the thoughts of Confucius, chosen from the famous book called the *Analects*, or *Gatherings*, in which his followers collected what they remembered of his sayings :

" Sincerity is the end and beginning of things ; without sincerity there would be nothing."

" When a man feels the difficulty of doing, can he be other than cautious and slow in speaking ? "

" The man of virtue makes the difficulty his first business, and success only a subsequent consideration ; this may be called perfect virtue. If doing what is to be done be made the first business, and success a secondary business, is not this the way to exalt virtue ? To assail one's own wickedness and not that of others, is not this the way to correct evil ? "

" Those who know the truth are not equal to those that love it ; and they that love it are not equal to those who find delight in it."

" If Heaven had wished to let the cause of truth perish, then I, a mere mortal, should not have been bound up with it. While Heaven does not let the cause of truth perish, what can the people do to me ? "

" To give oneself earnestly to do the duties due to men, and while respecting the spirits, to keep aloof from them, may be called wisdom."

" The wise find delight in water ; the virtuous find delight in hills. The wise are tranquil ; the virtuous are active. The wise are joyful ; the virtuous are long-lived."

" He with whom neither slander that gradually soaks in nor statements that

startle like a wound in the flesh are successful may be called intelligent indeed. Yes ; the man with whom neither soaking slander nor startling statements are successful may be called far-seeing."

" He who offends against Heaven has none to whom he can pray."

" Man is born for uprightness."

" Hard is the case of the man who stuffs himself with food the whole day without applying his mind to anything. Are there not gamblers and chess-players ? To be one of these would still be better than to be doing nothing at all."

" Not to withdraw after making an error is itself a new error."

" Whatever the mind may attain to, unless the goodness within is powerful enough to keep guard over it, is assuredly lost even though it be gained."

" Shall I teach you what knowledge is ? When you know a thing, to hold that you know it ; and when you do not know a thing, to allow that you do not know it. That is knowledge."

" At a funeral it is better that there be deep sorrow than a minute attention to ceremony."

" The difference between the great man and the ordinary man is that the great man has a fair mind which sees all sides, and the common man has a mind which is partisan and one-sided."

" To see the right, and not to do it, is to be a coward."

" Four of the marks of a superior man are : In his conduct of himself he is humble ; in serving his superiors he is respectful ; in nourishing the people he is kind ; in ordering the people he is just."



A LINE OF SUBMARINES MOVING RAPIDLY THROUGH THE WATER

## MEN BENEATH THE WATERS

### THE UNSEEN SHIP WITH THE WONDERFUL EYE

CONTINUED FROM PAGE 5556.

**M**OST boys delight to read some of the books written by the famous French writer, Jules Verne, who died a few years ago. He wrote scientific tales, describing marvels which, at the time, nobody thought would be achieved. In 1873 he wrote a fascinating tale called "Twenty Thousand Leagues Under the Sea." That, in his day, seemed as impossible as the rest of his tales. To-day it is no longer impossible. We have a small number of ships in our Navy which, if they cannot travel 20,000 leagues under the sea, can travel beneath the waves almost as easily as they can travel on the surface.

These ships we call submarines. The name means, of course, that they can travel beneath the surface of the waves. Those of us who were fortunate enough to see the manœuvres some time ago know what these submarines are like. They are singular-looking vessels—long, shaped like a cigar, but flat on the top to afford standing-place for the officers and men.

In the middle of the deck is a little tower, called a conning-tower, and this is the only way into the boat for the crew. The observer notices also, rising from the vessel, something which looks like a tiny lighthouse. The important purpose which this serves we shall presently see. What work does this strange little vessel perform? The submarine is a vessel of war.

Suppose a hostile fleet should come to attack some large port, the submarines would be among the most important vessels sent out to defend the port. The submarine would steal quietly out of harbour, and perhaps might travel along on the surface of the sea. As soon as a hostile vessel was approached, down into the sea the submarine would go. But, quickly as it would disappear, the submarine would not dive until proper preparations had been made.

The first thing to be done would be for all the men to go inside and close the door in the conning-tower, so making the vessel perfectly water tight. And then the craft would be steered under water, with a careful officer to issue instructions as to which way it should go. Of course, the submarine has engines to make it go, but these are driven, not by steam, but by petrol or gasolene. It has the ordinary propeller and the ordinary rudder to steer it, but it has also two other rudders, which work, not vertically, but horizontally, to make the ship dive down or come up.

Still, even with diving rudders of this sort, we cannot by ordinary means make a floating vessel keep under water, so we have to increase the weight of the vessel. Therefore valves are opened in the submarine, and through these the sea-water rushes in and fills tanks built to receive it. When

sufficient water has been taken in to make the vessel sink to a certain depth, the valves are closed, and then the vessel works along under water at about ten or eleven miles an hour.

#### THE BRAVE MEN WHO LIVE IN THE LITTLE BOAT UNDER THE SEA

Inside the ship there are about a dozen men, including two officers—brave fellows all. They have to remain in this ship under water where no air can reach them. To enable them to do so, the ship carries compressed air, which is released, a little at a time, from special chambers, while the air which has become foul from having been breathed is, like the exhaust gases from the engine, driven out of the ship. The men may have to stay for hours and hours under water, so they have all necessary supplies of food and water with them.

When, all unseen, they creep under water up to the ship which they are sent to attack, they fire a torpedo at it, and destroy it. That, at any rate, is what they are supposed to do. When their work is done, they force out the water contained in the tanks and drive the submarine up to the surface of the sea, open the doorway in the conning-tower, and admit fresh air.

It is impossible to describe all the wonders concealed within the iron walls of a submarine, but we must not omit some other features of the work done by compressed air. This, as we have seen, becomes the atmosphere which the men have to breathe. When released from its chambers, it expands and becomes as ordinary air. While still compressed, it is the force used to drive out the water from the tanks. And should the submarine become stuck in the mud at the bottom of the sea, it is the compressed air which blows the mud away and releases the ship, enabling it to rise again.

#### THE UNSEEN DANGERS OF THE DEEP WHICH THE SUBMARINE HAS TO FACE

There have been many accidents to submarines, and many brave members of the submarine crews have lost their lives through their devotion to duty. In most cases the accidents have occurred through the submarine running into something, or through something running into the submarine. It is easy to understand how such accidents happen. The men in a submarine beneath the water cannot see what is taking place on the surface of the sea. It is possible for the officer who stands on the tiny

tower, which generally projects out of the water when the ship itself is only just under the surface, to observe what is happening on the surface of the sea; but if the submarine is travelling at a greater depth there can be no look-out on the tower, and direct observation can only be made through glass windows looking out into the depths of the sea.

But a clever inventor has overcome the difficulty. He has given to the crew of the submarine a wonderful eye by means of which they can see from the depths of the sea what is going on at the surface of the water. When the submarine is deep down in the sea, this wonderful instrument shows the officer what is happening in the world above, for as great a distance as thirteen miles all around.

The sailor on an ordinary ship and the ordinary individual on land can see in front of him, and to each side, but if he wants to see behind him he must turn round. But the submarine sailor can see on all sides of him by simply looking straight in front of him.

#### THE WONDERFUL EYE OF THE SUBMARINE THAT CAN SEE ALL AROUND

What is the marvellous instrument that gives him this power, as though he had a third eye? It is called the periscope, a word that comes from two Greek words, *peri*, around, and *skopo*, I look. It is an instrument that *looks around*. We can understand how it works by looking at the pictures on these pages.

The appearance will suggest a small lighthouse, but instead of shedding forth light to enable people outside to see, it brings the pictures of outside objects inside, so that those inside may see what is outside. The periscope is a long tube that projects from the submarine, above the surface of the sea. Near the top is a lens in the form of a ring. This is an eye that sees in every direction at once.

From horizon to horizon, the image of whatever is visible passes into this ring-shaped lens, and is reflected down the tube on to a flat surface below, as seen in the picture on page 5592. The officer and crew of the submarine, by looking at the flat surface upon which the images of things above are reflected, see what is happening all around them, and know what dangers to avoid and what course to take. By means of this new invention the safety of the submarine will be greatly increased, and fewer lives will be lost.



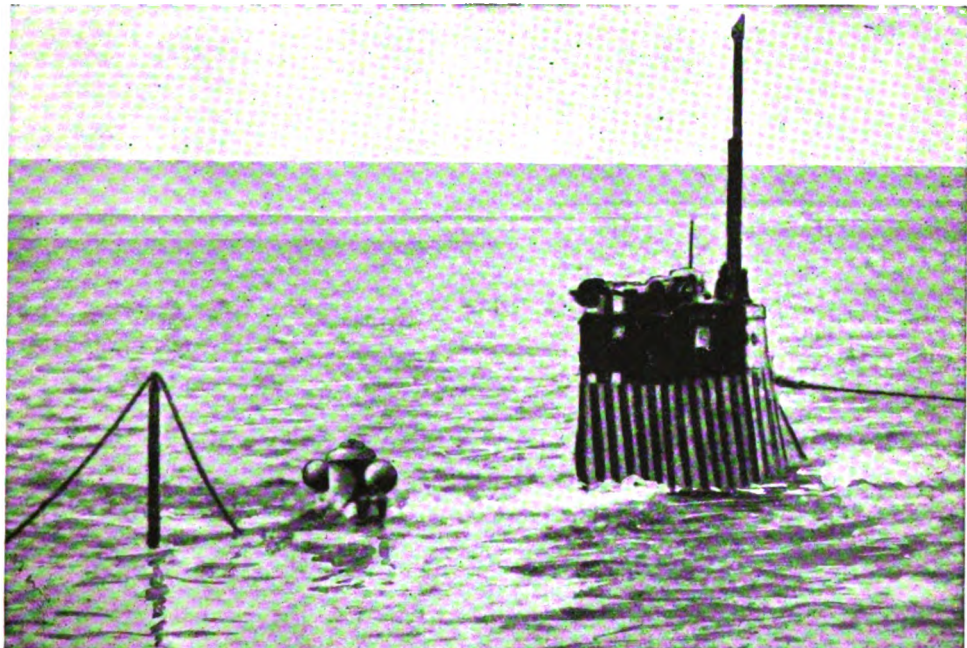
# THE SHIPS THAT FIGHT UNDER THE SEA



Twenty years ago a ship that could travel under the sea was a mere dream of the storytellers, but to-day every big navy has its fleets of submarine vessels, and they are familiar objects at all our naval ports. Here we see the very latest type of modern submarine, a large and swift vessel, that can sink a battleship, while itself keeping out of sight.



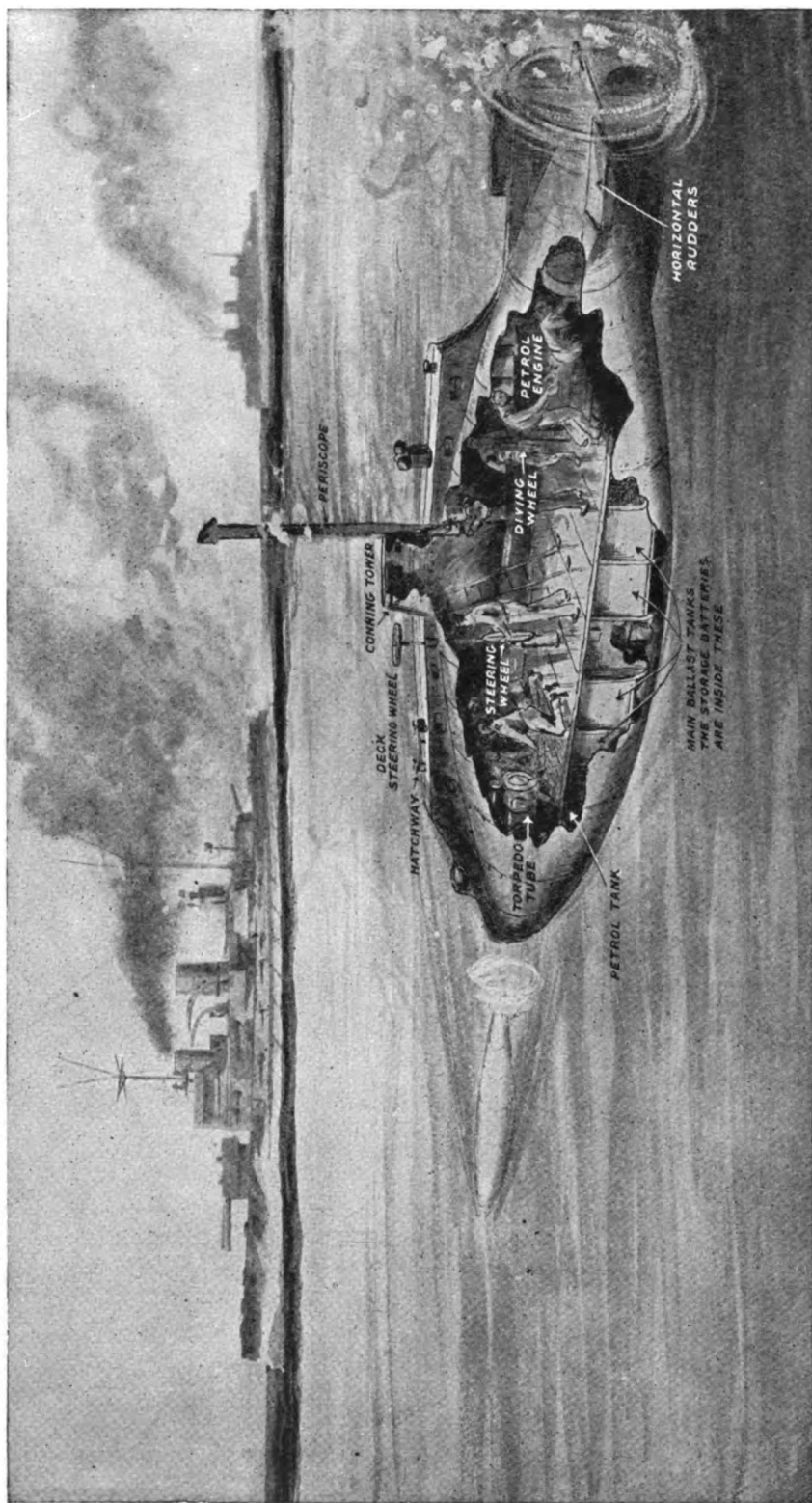
This is an earlier and smaller type of submarine boat, known, from the name of its inventor, as the Holland type. The vessel is travelling at full speed while half submerged, and some members of the crew are seen standing on deck. But, if necessary, the boat can sink beneath the waves and completely disappear from sight in a minute or two.



Here we see another type of submarine, with only its conning-tower visible above the water. It is about to take the final plunge beneath the waves, with its crew of sixteen officers and men, who, in actual war, could then do their deadly work unseen by the enemy. The conning-tower has a steel lid to resist the pressure of the water.

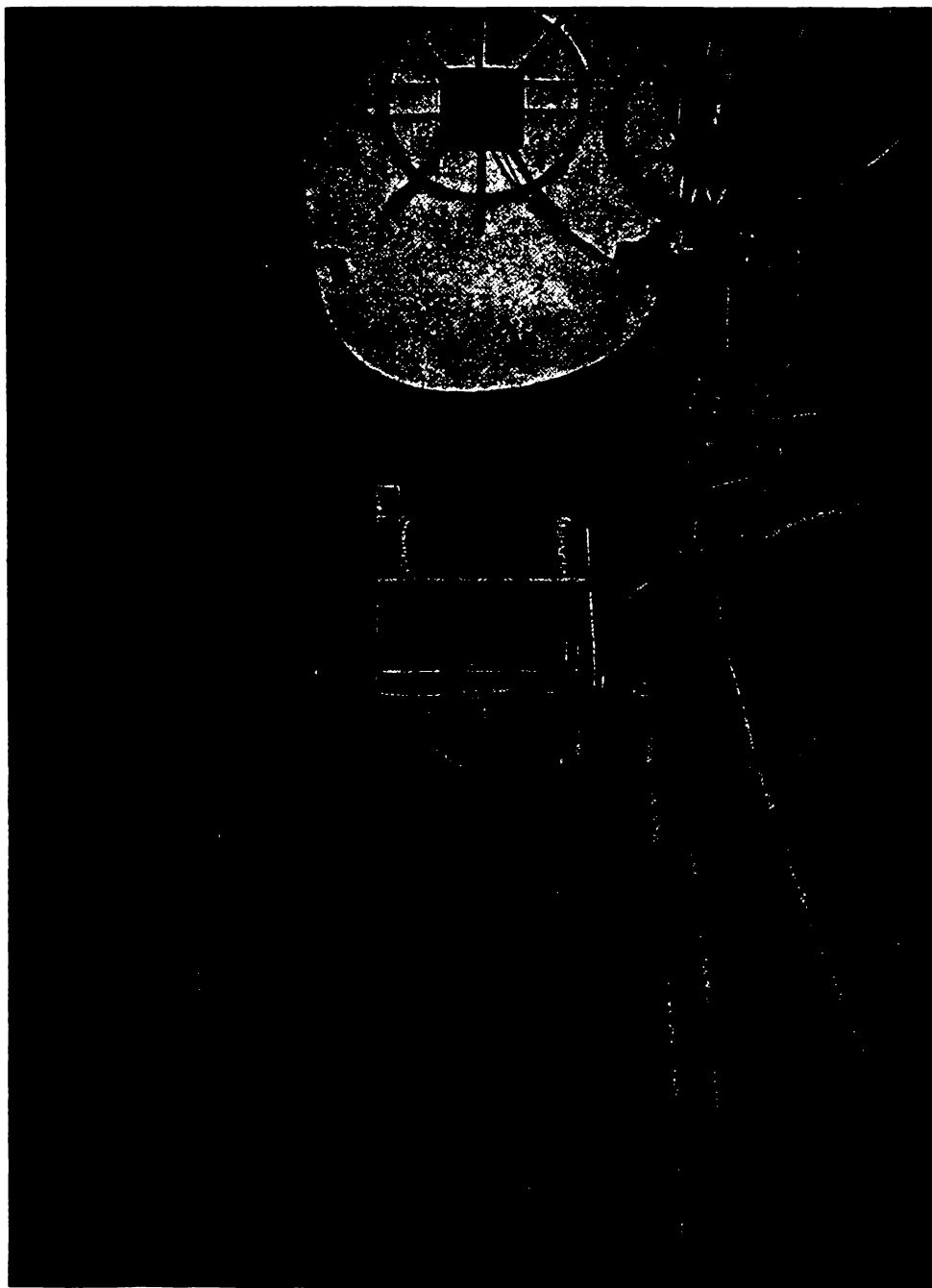


# THE TERRIBLE ENEMY THAT LIES HIDDEN IN THE SEA



Here we see a submarine in actual war. It is attacking a battleship, and has just struck the great vessel with a torpedo. But the battleship is unable to reply, for the mysterious submarine is hurling its death-dealing missiles beneath the waves, quite out of sight of its opponent. The artist has drawn the submarine in section to show what the inside is like. When a ship is moving, a torpedo is never fired directly at her. A torpedo travels very slowly compared with a shot from a gun, and because of this, a ship could steam out of danger if the torpedo were aimed directly at her. It is therefore aimed a little ahead of the ship, so that the vessel and the torpedo may reach the same spot together and thus the torpedo may strike the vessel and sink it.

## THE INSIDE OF A SUBMARINE BOAT

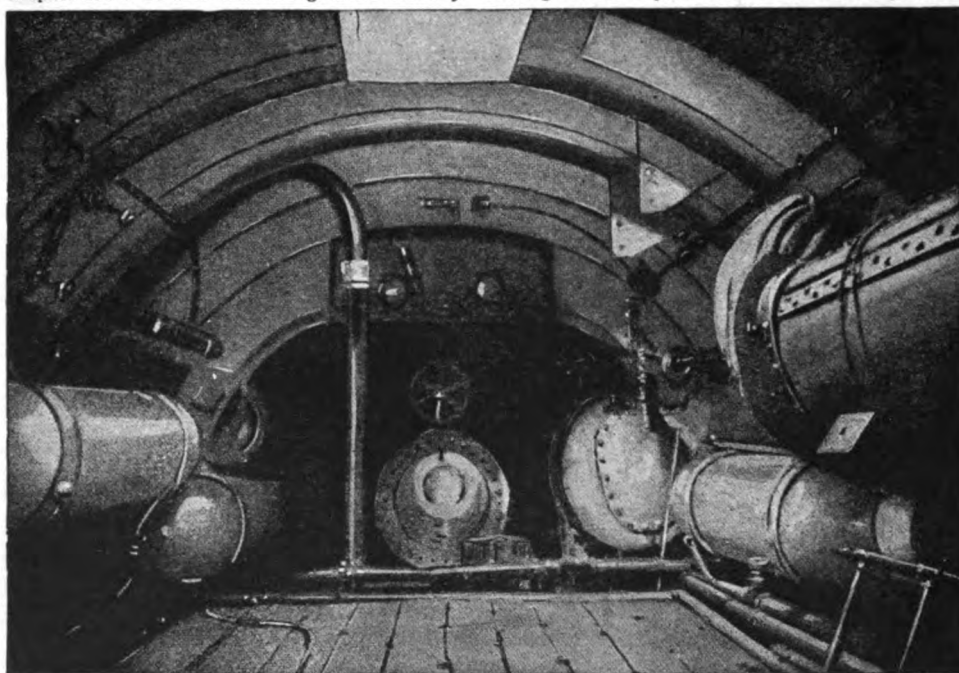


There is no more jealously guarded secret in the world than the exact arrangement and details of the inside of a submarine. Every navy preserves the mystery of its own particular type of boat, and this fact makes the picture on this page all the more wonderful, for it is an actual photograph of the inside of a submarine boat—one of the few photographs of its kind ever taken. The curious little platform in the centre of the picture is the place from which the commanding officer controls the boat, and directly above is the steering wheel. The wheels to the right are for controlling the vessel when it is diving or rising to the surface, and on the left is the indicator which shows by a glance at any and every moment the exact depth the boat is below the surface of the sea.

## A FIGHTING SHIP BENEATH THE WAVES



Here we see how the crew of a submarine use their deadly weapons in case of attack by an enemy. They are just firing a torpedo from the forepart of their vessel, and this, if well aimed, may sink some mighty battleship that has cost, perhaps, ten million dollars. The men appear to be cramped for room, but on a submarine every inch of space has to be used with the greatest economy. The legs of the captain can be seen on his platform.



In this picture we are looking right into the bow, or nose, of the submarine, and in the centre is the tube through which the torpedo is sent on its deadly journey. To the right and left are large tanks of compressed air. This is needed for breathing purposes, and for firing the torpedoes. Each submarine carries five torpedoes, every one of them capable of sinking a huge battleship, although, of course, in war-time many of them miss their mark and are lost.

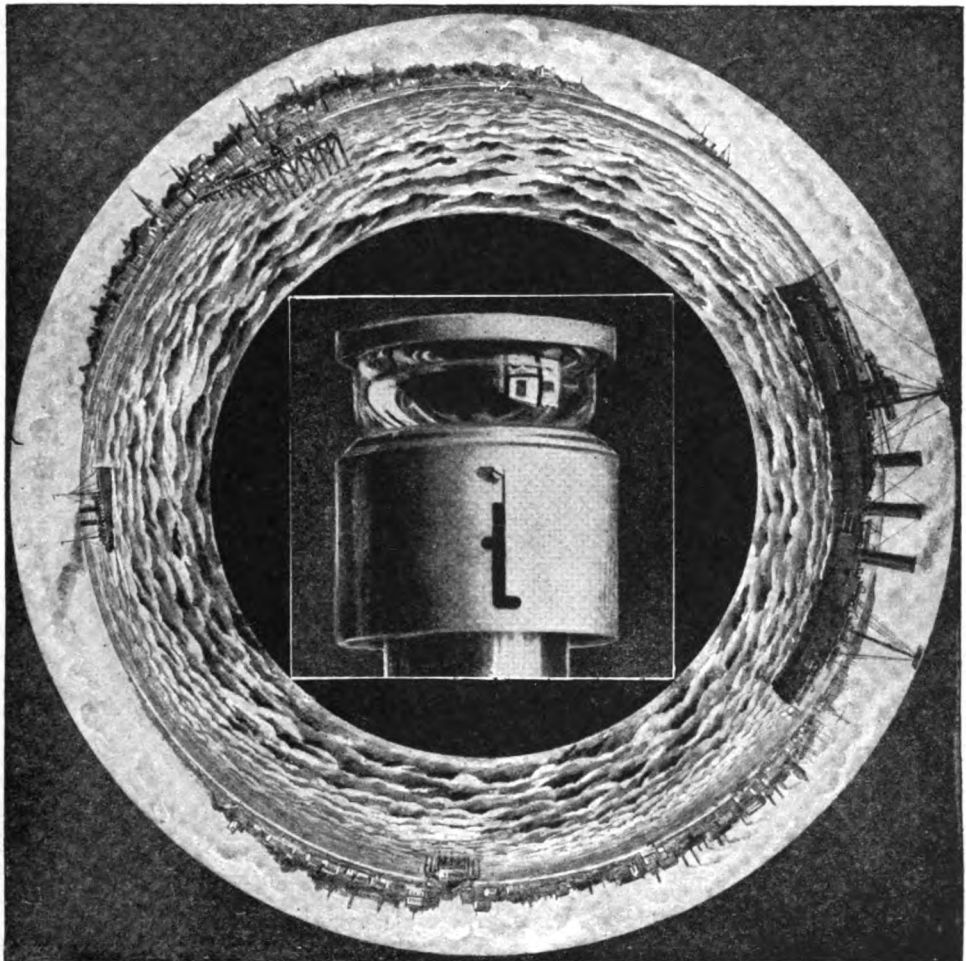
## THE WONDERFUL EYE OF THE SUBMARINE



This officer is watching the manometers, which are instruments to tell whether the air in the submarine is keeping pure enough for the crew to breathe with safety.



The sailors in this picture are just launching a torpedo on its journey of death beneath the sea. Nothing can resist this terrible instrument if it once hits the mark.



The dangers of being on a submarine have been greatly reduced by the invention of a little instrument called a periscope, with which all submarines are now fitted. This enables those in the submarine to see what is happening all around them in the sunlight away above their heads. In fact, the periscope is the wonderful eye of the submarine. It is a long tube with an arrangement of mirrors at the top like that shown in the centre picture here. This catches a view of the scene around, and reflects it, as shown in this circular picture, on to a table below.

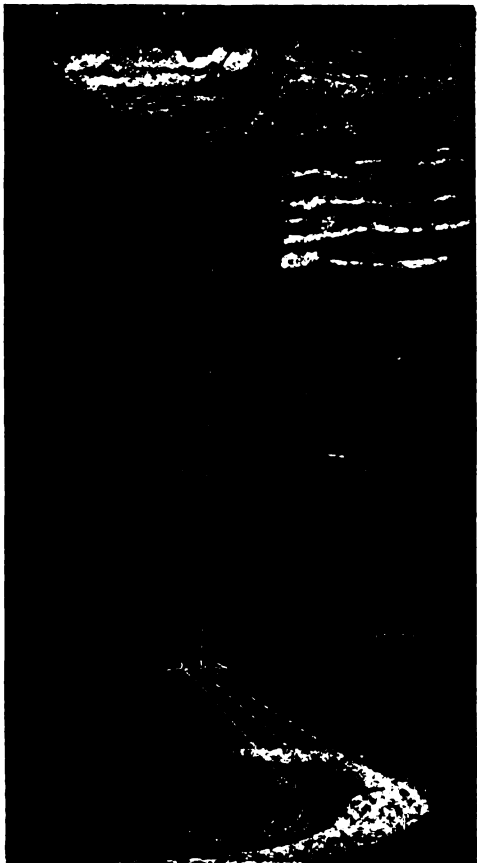
# LOOKING OUT ABOVE AND BELOW THE WAVES



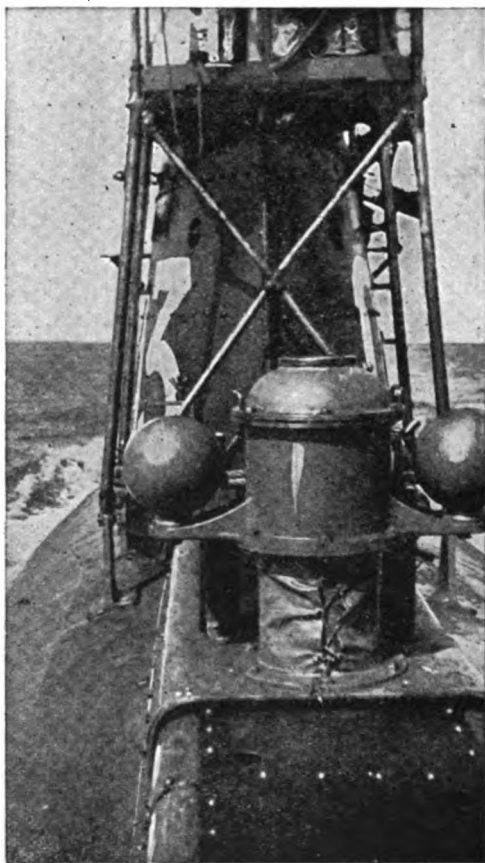
Here we see the officers of a submarine studying the picture of what is happening above, which the periscope has reflected upon the table, somewhat in the same way as a picture is thrown upon the sheet by a magic lantern.



These men are taking a last look round before sinking. Air-compressors maintain the supply of air in a submarine. Formerly, white mice used to be kept on board to indicate, when they fainted, that the air was getting foul.



In this picture we see how the periscope works. The ship on the waves is seen by the lens of the periscope, and the picture is reflected down the tube on to the table.



This picture of the conning-tower and the apparatus on deck shows the massiveness of the most modern kind of submarine. New and larger types are constantly being built.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 567.

Victor Hugo, whose countrymen of France admired him most as a poet and a writer of plays, is famous to the rest of the world chiefly as a great novelist. But even his stories and romances are instinct with what we call poetry, for they are all so highly touched with imagination that they carry the mind of the reader away from the realities of every day into the realm of imagined things. That is to say, he is still a poet when he is writing prose, for all his stories have an element of grandeur which is truly poetic. His great novel, "Ninety-three," is a tale of the most dramatic character, describing that terrible year, 1793, when the French Revolution reached the height of its fury. No other writer could so well have reflected the unrest of the period as Victor Hugo, and in reading "Ninety-three" we feel something of what those who lived at that time must have felt, for the imagination of the poet-novelist enables him to live the past over again, and to impress his vision of it on the minds of his readers. The following vivid description of a cannon that broke loose on board a ship of war is translated from "Ninety-three."

## A FIGHT WITH A CANNON: By VICTOR HUGO

**L**A VIEUVILLE'S words were suddenly cut short by a desperate cry, and at the same instant they heard a noise as unaccountable as it was awful. The cry and this noise came from the interior of the vessel.

The captain and lieutenant made a rush for the gun-deck, but could not get down. All the gunners were hurrying frantically up.

A frightful thing had just happened.

One of the carronades of the battery, a twenty-four pounder, had got loose.

This is, perhaps, the most formidable of ocean accidents. Nothing more terrible can happen to a vessel in open sea and under full sail.

A gun that breaks its moorings becomes suddenly some indescribable supernatural beast. The mad mass has the bounds of a panther, the weight of the elephant, the agility of the mouse, the obstinacy of the ox, the unexpectedness of the surge, the rapidity of lightning, the deafness of the tomb. It weighs ten thousand pounds, and it rebounds like a child's ball. Its flight is a wild whirl abruptly cut at right angles. What is to be done? How to end this?

You can make a mastiff hear reason, astound a bull, fascinate a boa, frighten a tiger, soften a lion; but there is no resource with that monster—a cannon let loose. You cannot kill it—it is dead; at the same time it lives.

The horrible cannon flings itself about, advances, recoils, strikes to the

right, strikes to the left, flees, passes, disconcerts ambushes, breaks down obstacles, crushes men like flies.

In an instant the whole crew were on foot. The fault was the chief gunner's; he had neglected to fix home the screw-nut of the mooring-chain, and had so badly shackled the four wheels of the carronade that the play given to the sole and frame had separated the platform, and ended by breaking the breeching. The cordage had broken, so that the gun was no longer secure on the carriage. As a heavy wave struck the port, the carronade, weakly attached, recoiled, burst its chain, and began to rush wildly about.

Then arose the cry of distress which had been heard. The men rushed toward the ladder; the gun-deck emptied in the twinkling of an eye. The enormous cannon was left alone. She was given up to herself. She was her own mistress, and mistress of the vessel. She could do what she willed with both. This whole crew, accustomed to laugh in battle, trembled now.

All were silent; the cannon kept up its horrible fracas.

The waves beat against the ship; their blows from without responded to the strokes of the cannon.

It was like two hammers alternating.

Suddenly, into the midst of this sort of inaccessible circus, where the escaped cannon leaped and bounded, there sprang a man with an iron bar in his hand. It was the author of this



catastrophe—the gunner whose culpable negligence had caused the accident; the captain of the gun. Having been the means of bringing about the misfortune, he desired to repair it. He had caught up a handspike in one fist, a tiller-rope with a slipping noose in the other, and jumped down into the gun-deck.

Then a strange combat began, a Titanic strife—the struggle of the gun against the gunner; a battle between matter and intelligence; a duel between the inanimate and the human.

The man was posted in an angle, the bar and rope in his two fists; backed against one of the riders, settled firmly on his legs as on two pillars of steel, livid, calm, tragic, rooted, as it were, in the planks, he waited.

He waited for the cannon to pass near him.

The gunner knew his piece, and it seemed to him that she must recognise her master. He had lived a long while with her. How many times he had thrust his hand between her jaws! It was his tame monster. He began to address it as he might have done his dog.

"Come!" said he. Perhaps he loved it.

He seemed to wish that it would turn toward him.

But to come toward him would be to spring upon him. Then he would be lost. How to avoid its crush? There was the question. All stared in terrified silence.

Not a breast respired freely, except perchance that of the old man who alone stood in the deck with the two combatants, a stern second.

He might himself be crushed by the piece. He did not stir.

Beneath them the blind sea directed the battle.

At the instant when, accepting this awful hand-to-hand contest, the gunner approached to challenge the cannon, some chance fluctuation of the waves kept it for a moment immovable, as if suddenly stupefied.

"Come on!" the man said to it. It seemed to listen.

The struggle began—struggle unheard of. The fragile matching itself against the invulnerable. The thing of flesh attacking the brazen brute. On the one side blind force, on the other a soul.

The whole passed in a half-light. It was like the indistinct vision of a miracle.

An end of broken chain remained attached to the carronade. This chain

had twisted itself, one could not tell how, about the screw of the breech-button. One extremity of the chain was fastened to the carriage. The other, hanging loose, whirled wildly about the gun and added to the danger of its blows.

The screw held it like a clinched hand, and the chain, multiplying the strokes of the battering-ram by its strokes of a thong, made a fearful whirlwind about the cannon—a whip of iron in a fist of brass. This chain complicated the battle.

Nevertheless, the man fought. Sometimes, even, it was the man who attacked the cannon. He crept along the side, bar and rope in hand, and the cannon had the air of understanding, and fled as if it perceived a snare. The man pursued it, formidable, fearless.

Such a duel could not last long. The gun seemed suddenly to say to itself, "Come, we must make an end!" and it paused. One felt the approach of the crisis. The cannon, as if in suspense, appeared to have, or had—because it seemed to all a sentient being—a furious premeditation. It sprang unexpectedly upon the gunner. He jumped aside, let it pass, and cried out, with a laugh, "Try again!" The gun, as if in a fury, broke a carronade to larboard; then, seized anew by the invisible sling which held it, was flung to starboard toward a man, who escaped.

Suddenly it darted upon him. The gunner avoided the shock.

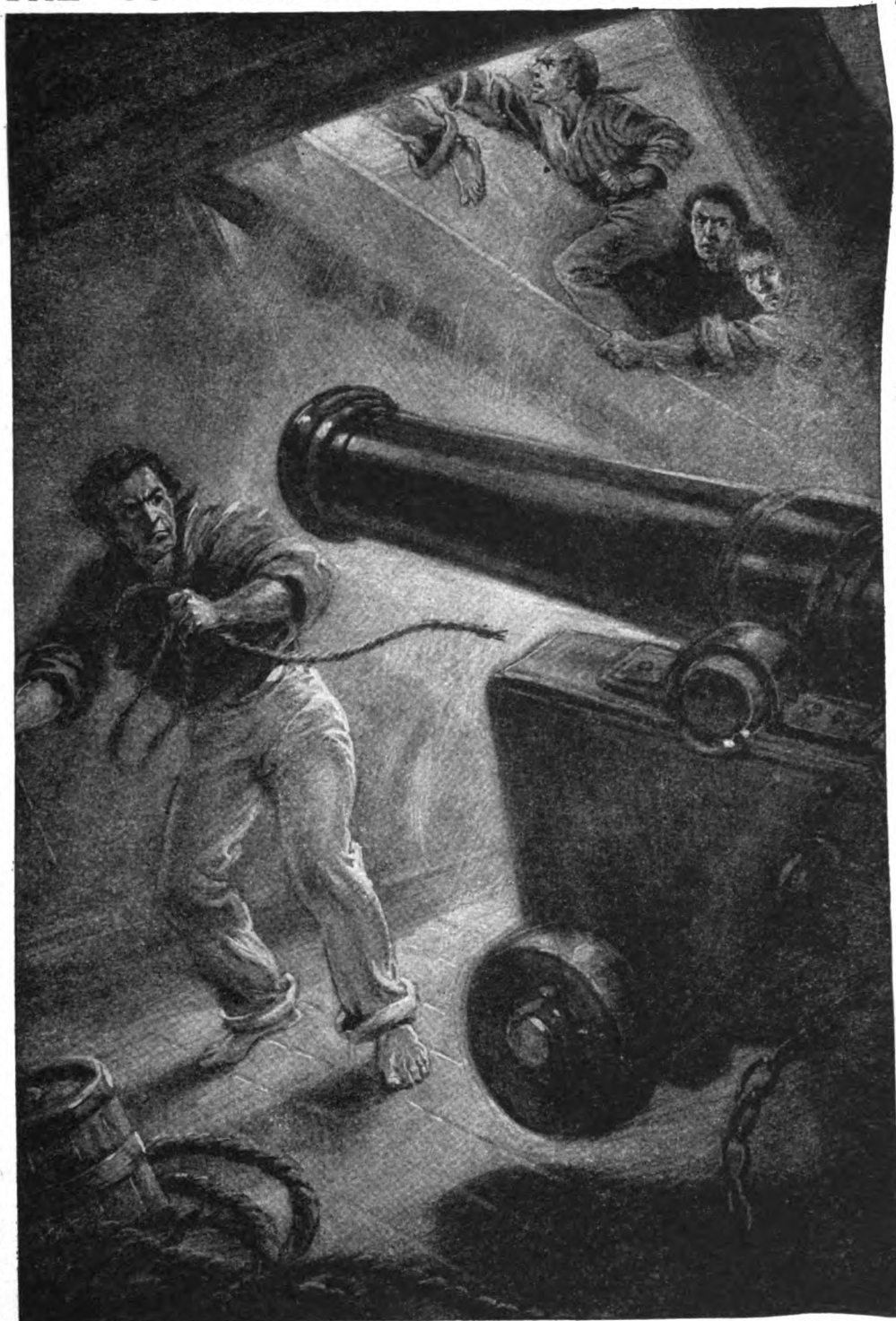
Three carronades gave way under the blows of the gun; then, as if blind and no longer conscious of what it was doing, it turned its back on the man, rolled from the stern to the bow, bruising the stem and making a breach in the plankings of the prow. The gunner had taken refuge at the foot of the stairs, a few steps from the old man who was watching.

The gunner held his handspike in rest. The cannon seemed to perceive him, and, without taking the trouble to turn itself, backed upon him with the quickness of an axe-stroke. The gunner, if driven back against the side, was lost. The crew uttered a simultaneous cry.

But the old passenger, until now immovable, made a spring more rapid than all those wild whirls. He seized a bale of the false assignats, and, at the risk of being crushed, succeeded in flinging it between the wheels of the carronade.

The bale had the effect of a plug. A pebble may stop a log, a tree-branch turn

## THE GUN SPRANG SUDDENLY UPON HIM



Such a duel could not last long. As the gun sprang unexpectedly upon the gunner he jumped aside, let it pass, and cried, with a laugh, "Try again!" Suddenly, as if in a fury, it darted upon him, but the gunner avoided the shock.

an avalanche. The carronade stumbled. The gunner, in his turn, seizing this terrible chance, plunged his iron bar between the spokes of one of the hind wheels. The cannon was stopped.

It staggered. The man, using the bar as a lever, rocked it to and fro. The heavy mass turned over with a clang like

a falling bell, and the gunner, dripping with sweat, rushed forward headlong and passed the slipping noose of the tiller-rope about the bronze neck of the overthrown monster. It was ended. The man had conquered. The ant had subdued the mastodon; the pygmy had taken the thunderbolt prisoner.

## THE PLAGUE-STRICKEN HOME: By DANIEL DEFOE

Daniel Defoe, who was the real father of English fiction, and whose beautifully clear style of story-telling has never been surpassed by any other English writer, wrote many books; but perhaps his "Journal of the Plague Year" is next in popularity to his immortal "Robinson Crusoe." It is an enthralling account of London during the terrible visitation of the Plague, which carried away many thousands of the city's inhabitants in the year 1665. The book is written from the point of view of an eye-witness, but as Defoe was only six at the time of the Plague, all that he could know of the terrible year would be by hearsay. We have, therefore, to regard the work as a fiction, but no actual historical account gives a truer picture of it than this enthralling story, where the highest literary art has created a fadeless vision of a terrible time. The extract here chosen is one of the most striking, and, although Defoe himself could not have talked with this poor waterman, we are none the less impressed by the feeling of truth in the story.

I TURNED away over the fields from Bow to Bromley, and down to Blackwall, to the stairs which are there for landing or taking water. Here I saw a poor man walking on the bank, or seawall, as they call it, by himself. I walked awhile also about, seeing the houses all shut up; at last I fell into some talk, at a distance, with this poor man. First I asked how people did thereabouts. "Alas, sir," says he, "almost desolate, all dead or sick; there are very few families in this part, or in that village," pointing at Poplar, "where half of them are not dead already, and the rest sick." Then he pointing to one house, "They are all dead," said he, "and the house stands open, nobody dares go into it. A poor thief," says he, "ventured in to steal something, but he paid dear for his theft, for he was carried to the churchyard, too, last night." Then he pointed to several other houses. "There," says he, "they are all dead, the man and his wife and five children. There," says he, "they are shut up. You see a watchman at the door"; and so of other houses.

"Why," says I, "what do you here all alone?" "Why," says he, "I am a poor, desolate man; it hath pleased God I am not yet visited, though my family is, and one of my children dead." "How do you mean, then," said I, "that you are not visited?" "Why," says he, "that is my house," pointing to a very little low boarded house, "and there my poor wife and two children live," said he, "if they may be said to live; for my wife

and one of the children are visited, but I do not come at them." And with that word I saw the tears run very plentifully down his face; and so they did down mine too, I assure you.

"But," said I, "why do you not come at them? How can you abandon your own flesh and blood?" "Oh, sir," says he, "the Lord forbid; I do not abandon them, I work for them as much as I am able; and, blessed be the Lord, I keep them from want." And with that I observed he lifted up his eyes to heaven with a countenance that presently told me I had happened on a man that was no hypocrite, but a serious, religious, good man; and his ejaculation was an expression of thankfulness that, in such a condition as he was in, he should be able to say his family did not want.

"Well," say I, "honest man, that is a great mercy, as things go now with the poor. But how do you live, then, and how are you kept from the dreadful calamity that is now upon us all?" "Why, sir," says he, "I am a waterman, and there is my boat," says he, "and the boat serves me for a house; I work in it in the day, and I sleep in it in the night, and what I get I lay it down upon that stone," says he, showing me a broad stone on the other side of the street, a good way from his house; "and then," says he, "I halloo and call to them till I make them hear, and they come and fetch it."

"Well, friend," says I, "but how can you get money as a waterman? Does anybody go by water these times?"

"Yes, sir," says he, "in the way I am employed there does. Do you see there," says he, "five ships lie at anchor?" pointing down the river a good way below the town; "and do you see," says he, "eight or ten ships lie at the chain there, and at anchor yonder?" pointing above the town. "All those ships have families on board, of their merchants and owners, and such like, who have locked themselves up, and live on board, close shut in, for fear of the infection; and I tend on them to fetch things for them, carry letters, and do what is absolutely necessary, that they may not be obliged to come on shore; and every night I fasten my boat on board one of the ship's boats, and there I sleep by myself, and, blessed be God, I am preserved hitherto.

"I seldom come on shore here; and I come only now to call my wife and hear how my little family do, and give them a little money which I received last night."

"Poor man," said I; "and how much hast thou gotten for them?"

"I have gotten four shillings," said he, "which is a great sum, as things go now with poor men; but they have given me a bag of bread, too, and a salt fish, and some flesh; so all helps out."

"Well," said I, "and have you given it them yet?"

"No," said he, "but I have called, and my wife has answered that she cannot come out yet, but in half an hour she hopes to come, and I am waiting for her. Poor woman," says he, "she is brought sadly down; she has had a swelling, and

it is broke, and I hope she will recover, but I fear the child will die; but it is the Lord!" Here he stopt, and wept very much.

At length, after some further talk, the poor woman opened the door, and called "Robert! Robert!" He answered, and bid her stay a few moments, and he would come; so he ran down the common stairs to his boat, and fetched up a sack in which was the provisions he had brought from the ship; and when he returned he hallooed again. Then he went to the great stone which he showed me, and emptied the sack, and laid all out, everything by themselves, and then retired; and his wife came with a little boy to fetch them away; and he called and said such a captain had sent such a thing, and such a captain such a thing, and at the end adds, "God has sent it all; give thanks to Him." When the poor woman had taken up all, she was so weak she could not carry it at once in, though the weight was not much neither; so she left the biscuit which was in a little bag, and left a little boy to watch it till she came again.

"Well, but," says I to him, "did you leave her the four shillings too, which you said was your week's pay?"

"Yes, yes," says he, "you shall hear her own it." So he calls again, "Rachel! Rachel!" which, it seems, was her name, "did you take up the money?" "Yes," said she. "How much was it?" said he. "Four shillings and a groat," said she. "Well, well," says he, "the Lord keep you all"; and so he turned to go away.

## THE CASTLE ON THE CLIFF: By GEORGE MACDONALD

Dr. George Macdonald, the famous Scottish novelist and poet, had also the rarer power of writing the most charming fairy stories. This is not one of his fairy tales, as such tales never have a "moral," but he uses here the style of the fairy story to illustrate a religious lesson. If we read this carefully, and remember that the castle on the cliff is really meant to represent the dwelling-place of the human family, and the absent parent, whose care for his children in the castle is shown in many ways, and who will some day show himself to them, is God the Father, we shall see that "The Castle on the Cliff" is really a story that explains in a little space the religious faith of Christian people.

ON the top of a high cliff, forming part of the base of a great mountain, stood a lofty castle. When or how it was built, no man knew; nor could anyone pretend to understand its architecture. Everyone who looked upon it felt that it was lordly and noble.

Now, in this castle there dwelt a large family of brothers and sisters. They had never seen their father or mother. The younger had been educated by the elder,

and these by an unseen care or ministration about the sources of which they had, somehow or other, troubled themselves very little, for what people are accustomed to, they regard as coming from nobody; as if help and progress and joy and love were the natural crops of Chaos or old Night.

But Tradition said that one day—it was utterly uncertain *when*—their father would come, and leave them no more;

for he was still alive, though where he lived nobody knew. Now and then the young children would come in with a slow, stately step, and, with great eyes that looked as if they would devour all the creation, say that they had met their father among the trees, and that he had kissed them. "And," added one of them once, "I grew so big!" But when the others went out to look, they could see no one. And some said it must have been the brother, who grew more and more beautiful, and loving and reverend, and who had lost all traces of hardness, so that they wondered they could ever have thought him stern and harsh. But the eldest sister held her peace, and looked up, and her eyes filled with tears. "Who can tell," thought she, "but the little children knew more about it than we?"

Often at sunrise might be heard their hymn of praise to their unseen father, whom they felt to be near, though they saw him not. Some words thereof reached my ear through the folds of music in which they floated, as in an upward snowstorm of sweet sounds.

And these are some of the words I heard—but there was much I seemed to hear which I could not understand, and some things which I understood but cannot utter again:

"We thank thee that we have a father, and not a maker; that thou hast begotten us, and not moulded us as images of clay; that we have come forth of thy heart, and have not been fashioned by thy hands. It *must* be so. Only the heart of a father is able to create. We rejoice in it, and bless thee that we know it. We thank thee for thyself. Be what thou art—our root and life, our beginning and end, our all in all. Come home to us. Thou livest; therefore we live. In thy light we see. Thou art—that is all our song."

Thus they worship, and love, and wait. Their hope and expectation grow ever stronger and brighter that one day, ere long, the Father will show himself amongst them, and henceforth dwell in his own house for evermore. What was once an old legend has become the one desire of their hearts. And the loftiest hope is the surest of being fulfilled.



THE CASTLE STOOD ON THE TOP OF A HIGH CLIFF

## CANADIAN MINERAL RESOURCES

FOR a country possessing nearly half of North America, Canada has been exceedingly slow in developing its mineral resources and until recently many doubted whether Canada would ever become an important mining country. But on account of the increased activity of the past few years, Canadians are beginning to hope that their country will prove as rich as the great republic to the south. Almost all the provinces possess mineral resources of importance but only three, Nova Scotia, British Columbia and Ontario, have been large producers of the products of mines.

### GOLD

Gold has been found in all the provinces and territories with the exception of Prince Edward Island. In Nova Scotia, the area of gold bearing rocks is very wide and extends through the roughest part of the province. Quebec produces little gold; for many years the gold-bearing gravels on the Chaudiere River and its tributaries have been slightly worked. Gold is found over an extensive area of Ontario. Over nearly this entire area gold-bearing quartz is found. Gold mining is only in its infancy but it will not be many years before Ontario will be known for its production of this precious metal. Manitoba contains some gold-bearing quartz but the ore is so low grade that little attention has been paid to mining it. Some gold has been washed from the bars of the Saskatchewan river. It is believed that as Alberta is explored gold-bearing rocks will be found.

In the northwest corner of the Dominion is the district of Yukon, extending over an area of 192,000 square miles. The country is a large mining camp. The geological character of the territory is a continuation of that of British Columbia. There is a gold-bearing belt of indefinite width and three hundred miles long and this

area is one of the richest gold fields which has ever been discovered.

British Columbia has long been known as a gold mining country. It is the northwest continuation of the great gold and silver bearing belt of the Western States, from which so many hundreds of millions of dollars' worth of the precious metals have been obtained. Gold is found in paying quantities in almost every section of the province and there is scarcely a creek where "colour" cannot be found. The yearly output is about six million dollars.

### SILVER

Ontario and British Columbia are the two great silver-producing provinces. For many years some mines had been operated in the Thunder Bay district north of Lake Superior. A few years ago silver was discovered at Cobalt. This town has become the centre of the greatest silver-producing area in the world. When this country has been developed it will place Ontario in the front rank of the world's silver-producing countries.

For many years, British Columbia produced little silver but the discovery of silver-lead ores in the Kootenay district has rapidly increased the yield until it amounts to about three million ounces annually.

### LEAD

Lead is found in Ontario and British Columbia but it is only in the latter province that it is mined to any extent. Lead is mined as an ore of silver in which it may be looked upon as a by-product. The output of about fifty million pounds a year will continue to increase with that of silver.

### COPPER

British Columbia and Ontario are the important producers of copper. A small amount is mined in Quebec and reports show that the Barren Lands and the country around Hudson Bay

Copyright, 1911, by M. Perry Mills.



possess great quantities of rich copper ore. From British Columbia the first shipment was made in 1894 and the production has increased at a rapid rate until it amounts to upwards of forty million pounds a year. In Ontario the copper-producing district is around Sudbury and along the shores of Lake Superior.

#### NICKEL

Ontario possesses very rich deposits of nickel. The Sudbury district produces more of the metal than all the rest of the world. The most important fact in connection with the large output is that there is no sign of exhaustion.

#### IRON

All the provinces except Prince Edward Island possess important deposits of iron. Little mining or smelting is being carried on except in Nova Scotia, Quebec and Ontario. Nova Scotia takes the lead in the production of iron and as yet the industry is only in its infancy. Quebec and Ontario possess large deposits but little in way of development has been done. In British Columbia iron in great quantities has been discovered on the mainland and on Vancouver Island.

#### MINOR METALS

A considerable number of other metals besides those mentioned are found more or less extensively in Canada but little has been done in the way of mining them. Zinc is found and mined to some extent in Ontario and British Columbia. Cobalt, arsenic and corundum are found in paying quantities in Ontario. Small deposits of manganese and antimony exist in the Maritime Provinces. Some cinnabar is mined in British Columbia.

#### COAL

Canada has coal cropping out on the shores of the Atlantic, on the shores of the Pacific and underlying large areas of the interior plains. Ontario and Quebec, the two most populous provinces, do not possess coal. Nova Scotia is the largest producer among the provinces and its deposits are practically inexhaustible. New Brunswick has some coal but does not mine sufficient

for its own use. The western provinces are richly supplied with coal.

#### PETROLEUM

Petroleum has been found in many parts of Ontario but the western peninsula is the oil region. The county of Lambton is the seat of the industry but producing wells are found in adjacent counties. Oil has been discovered in small quantities at Gaspe, Quebec, in New Brunswick and Nova Scotia. It is believed that a large area of oil-bearing strata underlies a large part of northern Alberta. In British Columbia there is a large area of oil land.

#### NATURAL GAS

Along the shores of Lake Erie wells of natural gas are very numerous. The chief regions of production are Essex, Kent and Welland Counties but new localities are being continually found. Large flowing wells have been found in Alberta and British Columbia.

#### MINOR ECONOMIC MINERALS

Quebec produces a large part of the asbestos marketed in the world. Some valuable deposits have recently been discovered in Ontario and British Columbia. A considerable amount of mica is quarried in Quebec and Ontario. Gypsum is found in many places but the richest beds are in Nova Scotia. A few thousand dollars' worth of graphite is mined in Ontario and Quebec, where apatite is also found in large quantities. Some mineral paint, soapstone, whiting, actinolite and a few precious stones are produced. Large and valuable deposits of salt are found along the shore of Lake Huron.

#### BUILDING MATERIALS

Almost all parts of Canada are well supplied with suitable clay for brick, cement and tile making. Limestones of the best quality abound in Canada. Quebec possesses very valuable slate quarries, and some granite. Nova Scotia and New Brunswick have extensive and valuable granite deposits.

The three provinces now advancing at a rapid rate in the products of the mine are Ontario, British Columbia and Nova Scotia. The two latter are among the few regions in the world where unlimited supplies of coal and iron are found side by side.

# THE MARITIME PROVINCES

**N**OVA SCOTIA, New Brunswick and Prince Edward Island form a group of provinces on the eastern coast of Canada. They possess many common characteristics and their histories are closely interwoven. Acadia is another name that is frequently applied to this whole region. The descendants of the four thousand Acadians found in the country in 1763 now number a hundred and fifty thousand. They are largely found in certain counties forming real French communities differing in manners and language from near-by English speaking settlements.

## NOVA SCOTIA

The province consists of the peninsula of Nova Scotia and the island of Cape Breton. The peninsula is two hundred and sixty-eight miles long and varies in width from sixty to a hundred miles. The island is one hundred and eight miles long, with a very irregular width, and is hollowed out in the centre by a long arm of the sea — the Bras d'Or. Nova Scotia faces the Atlantic Ocean and is connected with New Brunswick by an isthmus which is eleven and a half miles wide at its narrowest point.

The coast is low, rugged and rocky. The western shores are wooded to the water's edge but on the eastern coast there is only a scanty growth of birch and spruce. The Atlantic coast is deeply indented with many excellent harbours, the most prominent being Halifax, easy of access, deep, free from rocks and large enough to contain the navies of the world with plenty of anchorage to spare.

## MINERALS

The mineral resources are valuable and it is one of the few countries where coal and iron are found side by side. Nearly all the commercial ores are found, but coal, iron, gypsum and gold are the only ones that are extensively worked. The coal fields at Sydney, Cape Breton, cover an area of two hundred and fifty square miles. The coal deposits of the province are estimated as containing forty billion tons.

The iron deposits are extensive but outside of Cape Breton are little worked. The gold fields are valuable and are scattered over the entire province. Gypsum is found in nearly every county but the deposits are only partially worked.

## FARMING

The agricultural lands face the inner bays. The valley of Annapolis is celebrated for its apples. In Cumberland, Colchester and Hants Counties are the dyked lands which have produced large crops of hay for the past hundred years. During recent years dairying has been attracting considerable attention.

## OTHER INDUSTRIES

The fisheries are among the finest and most profitable in the world. The Atlantic coast waters abound with cod, mackerel, herring, haddock, halibut, and its shores with lobsters and oysters. In the value of her fisheries Nova Scotia leads the other provinces. Over one-third of the province is still covered with valuable forests and lumbering is an important industry. It is only recently that manufacturing has become important.

## CITIES AND TOWNS

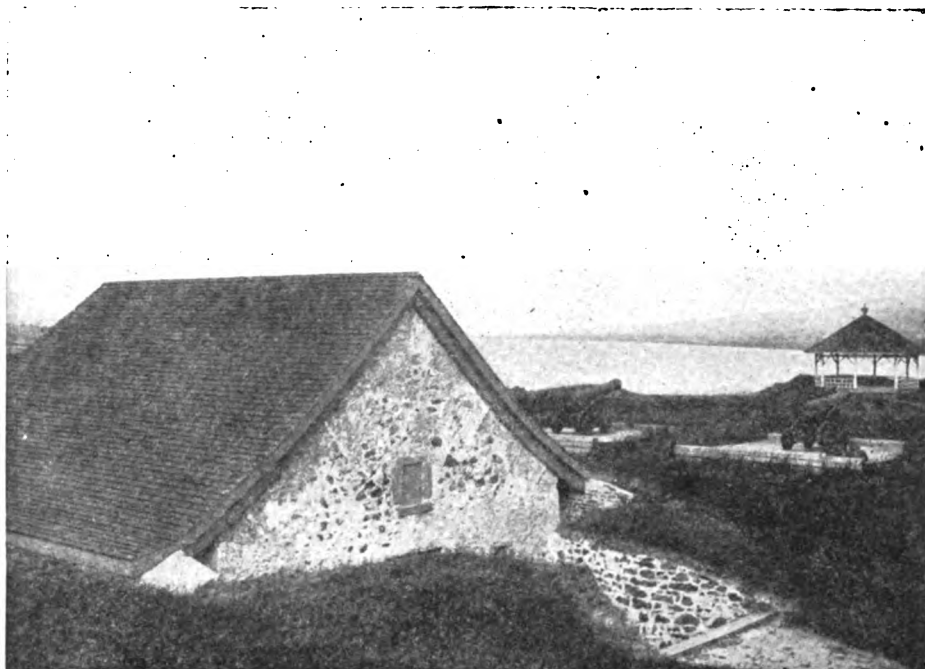
The chief city is Halifax (50,000), the capital of the province. It is very strongly fortified not only by the citadel, a fortress rising over the city, but by forts at the entrance of the harbour and upon islands which command the channels of the approach to the sea. The city has a splendid public school system, a university, electric cars, dry docks and cable communication with Europe. Sydney (10,000), on Cape Breton Island, is becoming an important city. It is the centre of a great coal industry and is rapidly becoming a large manufacturing place. Yarmouth, a shipping point; Truro a manufacturing centre; New Glasgow, a mining town; and Louisburg are flourishing and rapidly growing towns.

## PRINCE EDWARD ISLAND

The island lies in the form of a crescent in the Gulf of St. Lawrence and is

Copyright, 1911, by M. Perry Mills.

## WHAT NOVA SCOTIA CAN SHOW



The village of Annapolis Royal was once considered a strong fortress though now a modern warship would knock it to pieces in ten minutes. Here is the old powder magazine and some of the old cannon which were so dangerous a hundred and fifty years ago.



Halifax, Nova Scotia, is one of the old towns of America, and descendants of some of the original settlers still live there. Some of the residential streets, like Spring Garden Road, here shown, are beautiful.

## TWO CHARMING CANADIAN VILLAGES



This is the charming little village of Whycocomagh on Cape Breton Island, or rather we should say in the island, for it is in the interior, on an arm of the Bras d'Or Lake. No more beautiful place for a summer vacation can be found.



So much of Canada is busy and new that it is delightful sometimes to find a quaint old village like Kingsport on the Basin of Minas. Here everything moves slowly and quietly along, and the atmosphere is restful when one is tired of the busy city.

separated by the Strait of Northumberland from the shores of New Brunswick and Nova Scotia. It is one hundred and forty-five miles long and varies in width from four to thirty-four miles.

#### THE "GARDEN OF THE GULF"

The soil is very fertile and the island is dotted with farms. It is known as the "Garden of Canada." About eighty-five per cent of its area is cultivated and the remainder consists of peat bogs and swamps. The dense forests that once covered the island have been cleared away. The two staple crops are oats and potatoes but in recent years considerable attention has been paid to dairying.

Prince Edward Island is regarded as possessing around its coasts the best fishing grounds in the Gulf of St. Lawrence. The tastes of the islanders are more in the direction of agriculture and the fishing industry is not greatly developed. These two industries occupy the large percentage of the people as there is no mining, no lumbering and little or no manufacturing.

The smallest of the provinces of Canada is more thickly populated than any of the others. The capital and chief city is Charlottetown (12,000), situated on the south side of the island.

#### NEW BRUNSWICK

The province of New Brunswick is almost square in shape, being bounded on the north by the Bay Chaleur and Quebec, on the west by Quebec and Maine, on the south by Bay of Fundy and the small isthmus at its head and on the east by the Gulf of St. Lawrence. The extreme distance from east to west is two hundred miles and from north to south two hundred and thirty miles.

The southern border fronting on the Bay of Fundy is protected from the tides by a series of low mountain ridges. These extend to the southwest corner of the province and from there run at an angle of forty-five degrees to Bathurst on the Bay Chaleur.

The province depends largely upon the products of the forest and the sea. The valuable pine has been almost exhausted but large areas of hardwood remain. Spruce is the staple tree and

there are millions of acres of the finest spruce forests. During the past few years several large pulp wood mills have been erected and the making of pulp wood is becoming an important industry. The fisheries are extensive and productive.

Since the exhaustion of the deposit of albertite, New Brunswick has not developed any important mining interests. The area of coal land is large but coal mining does not pay as the seams are thin. Iron, manganese, antimony, copper and plumbago abound but no exports occur. Gold and silver in paying quantities are found in many places. Gypsum occurs in unlimited quantities and considerable is exported yearly. Valuable quarries of granite, grindstone and limestone are quite extensively worked.

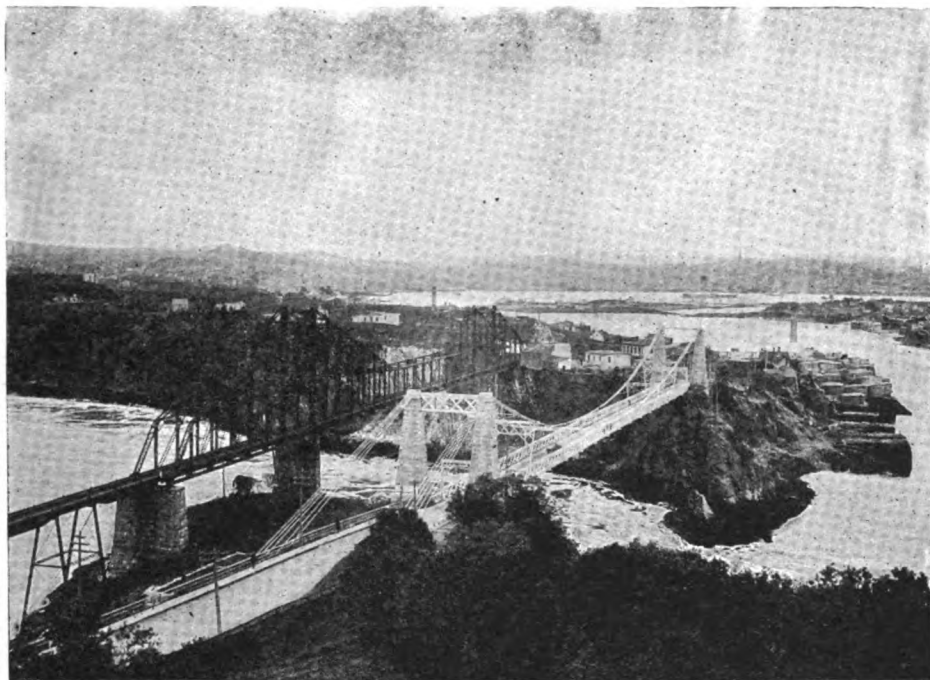
It is only recently that the agricultural resources are beginning to be developed as formerly the people turned their energies to lumbering and fishing. Along the valleys of the rivers and on the marsh lands at the head of the Bay of Fundy are large tracts of very rich farming land. The whole central area is suitable for agriculture. Everything may be grown that will grow in a temperate climate. In the southwest there are many sections of fine farms but only a small part of the fourteen million acres of arable land is under cultivation. During the last few years considerable attention has been paid to dairying and many new industries have been developed, such as the manufacture of cotton, boots, furniture, iron products, leather and wood pulp.

#### TOWNS

The chief city is St. John (45,000), situated on a fine harbour at the mouth of the river of the same name. It is a great shipping centre and recently has become noted for its manufactures. Moncton (12,000), a railroad and a manufacturing centre, is the second city.

The wonderful mineral wealth, the large harbours, the great areas of fertile soil, the extensive fisheries, the great water power, all indicate that these eastern provinces are destined to a great increase in wealth, trade and population during the twentieth century.

## TWO PROSPEROUS CANADIAN CITIES



St. John, New Brunswick, on the St. John River, was largely settled by loyalists who left America at the time of the Revolution. It is a busy city in a beautiful situation. Though partly destroyed by fire in 1877, the inhabitants were not discouraged. Its industries and manufactures are valuable.



Moncton, New Brunswick, has little in common with the sleepy villages we have shown you on other pages. It is a busy, bustling city which is growing in population and wealth.



## IN BEAUTIFUL EVANGELINE LAND



You remember the reference to Cape Blomidon in Longfellow's poem, *Evangeline*, about which you are told on page 2461. Here it is standing out in the beautiful Basin of Minas, that wonderful bay where the tides rise so high. Every year thousands of travellers visit this delightful country which has a charm all its own.



Few reminders of the time when the French held sway in Acadia now remain. The dwellings and the church where the order from the King of England was read have all gone, but tradition says that this row of willows were growing here in the time of *Evangeline*. We like to believe it true.

## THE CANADIAN ROCKIES AND BEYOND

**T**HE Canadian Rockies are a continuation of the United States chain of the Rocky Mountains. The boundary line between British Columbia and Alberta follows the summits of the range as far as fifty-four degrees north latitude, whence the Rocky Mountains continue in a northwest direction in British Columbia.

### MOUNTAIN PEAKS

The average height along the American boundary is eight thousand feet but the climax is reached between fifty and fifty-two degrees north latitude. Here the Saskatchewan and the Athabasca Rivers take their rise in the glaciers of the loftiest valleys of the range. Several peaks along the boundary reach ten thousand feet but the highest are Mount Murchison (13,500 feet), Mount Hooker (13,500 feet) and Mount Brown (16,000 feet), all near the sources of the two rivers.

There are many well-known passes over the mountains of which the most important are the Boundary (7,100 feet), the Crow's Nest (5,500 feet), the Kicking-horse (5,300 feet), through which passes the Canadian Pacific Railway, and Peace River (2,000 feet), through which flows the river of the same name.

The Rocky Mountains are correctly named as the summits are massive edges of broken limestone bare of soil and covered with perpetual snow. The effect of their great height is diminished on the eastern side by the rise of the foot-hills and the height of the passes. It is only on descending into the western valley that the full height is appreciated. The western slopes are the more densely wooded. On the eastern side the slopes are partly covered with trees, partly grassy prairies and partly barren rock. The mountains contain billions of tons of the finest bituminous and anthracite coal.

Frequently whole mountain ridges are formed of massive limestone strata uplifted and upturned on edges. Thus the mountains present to the traveller from the east abrupt and serrated outlines against the sky, revealing

by the acute summit peaks their recent geologic age. The width at the American boundary is about sixty miles, but it gradually grows less as they go northward.

### THE SELKIRKS

Parallel to and west of the Rocky Mountains and frequently included under one name with them though of distinct formation run the Selkirks. This range which has been shown by geologists to represent an earlier upheaval and to exhibit an entirely different series of rocks, is so broken and complex as to have received several names in different parts of its course. Entering from the south in a three-fold system and divided by important valleys, they are called respectively the Purcell, the Selkirk, and the Gold Mountains. To the north of the great bend of the Columbia River these give place to the term Caribou Mountains. These ranges are the chief sources of the gold and silver found in the province. They do not rise much higher than ten thousand feet; the highest peaks are Mount Sir Donald (10,645 feet), Mount Macdonald (9,440 feet) and Mount Tupper (9,030 feet), all in the Central or Selkirk Range. Many abrupt peaks are found but the general character of the whole chain is less serrated than the Rockies.

### THE COAST RANGE

Descending from the Gold Range, a great plateau intervenes for a distance of one hundred miles until the Coast Range, the great western rim of the mainland, rises on the ocean margin with a width of a hundred miles. This is often inaccurately called the Cascade Range, but geologists have shown that the Cascade Range of the United States is essentially different both in composition and geologic age and that the Coast Range is a distinct system and consists chiefly of crystalline rocks. It attains a height of seven thousand feet and abuts on the shore in many places in spurs which, rising almost out of the sea on the borders of fiords, show the full measure of the height to the observer. This range is very rugged and on the

## TWO GEMS OF THE ROCKIES



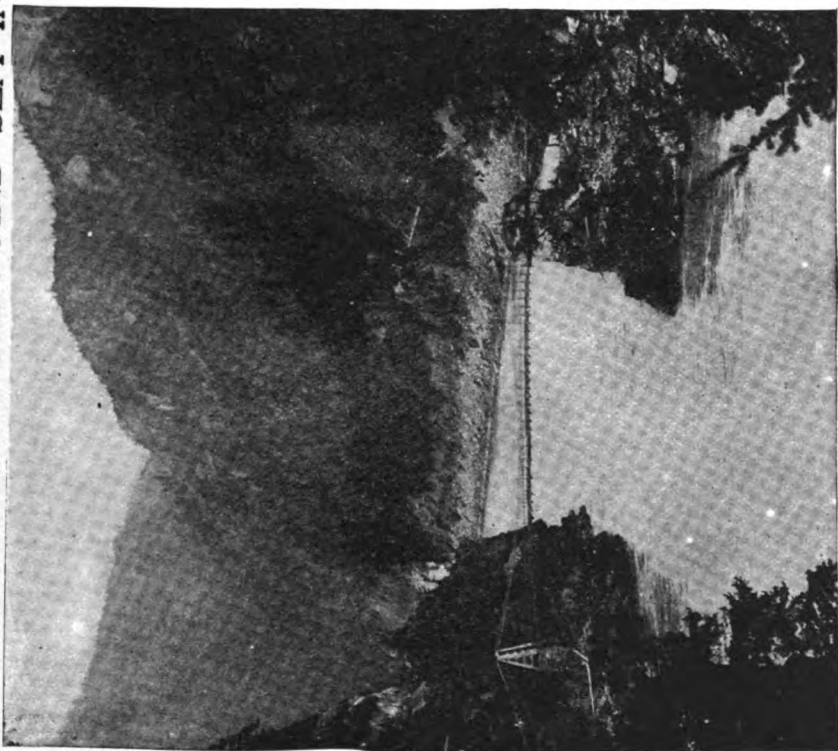
Among the Rocky Mountains are some beautiful sheets of water. Lake Louise, the "Lake in the Clouds," is surpassed in beauty by none of the famous lakes of which poets have sung in the past. The snow-covered mountains with the forests around their bases shut it in on all sides.



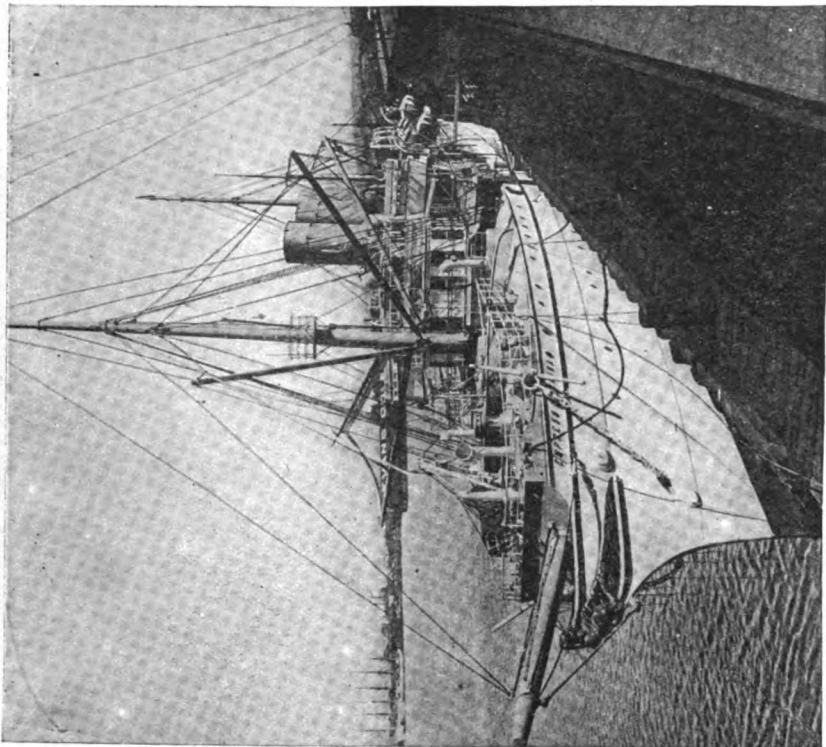
Pictures copyright, 1906, by H. C. White Co.

Not far from Field, British Columbia, is Emerald Lake, which some consider even more beautiful than Lake Louise. The enterprise of the railway company has built great hotels along the route, in which one may live in comfort while feasting the eyes upon the wonderful works of Nature.

## MOUNTAIN AND SEA IN THE CANADIAN WEST



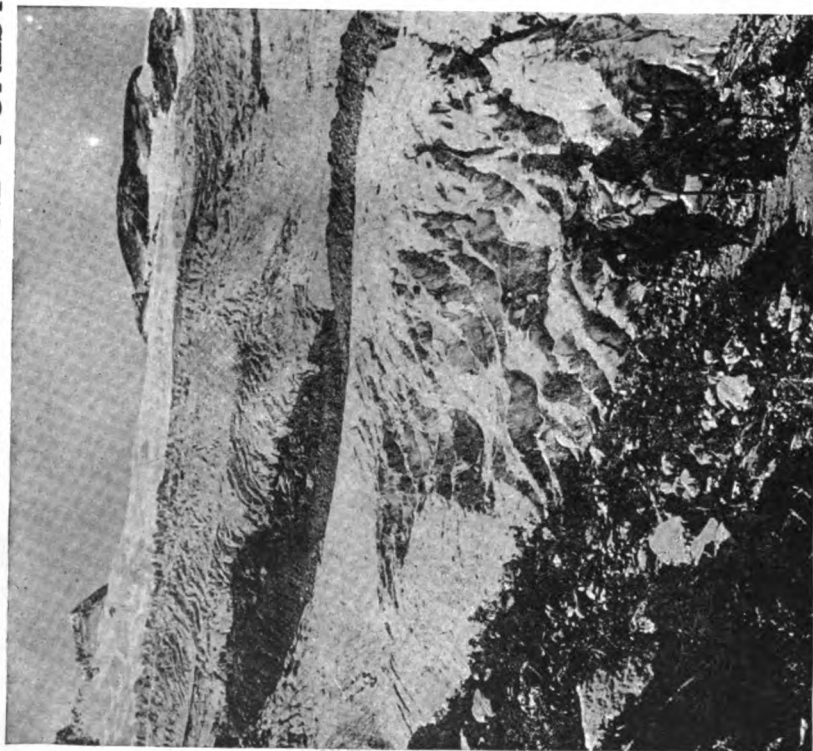
The Fraser River in British Columbia is rugged and swift for the greater part of its length, as it winds and twists along the way it has cut through the mountains. This graceful suspension bridge which seems hardly able to bear the weight of a doll is called Carlbou bridge and is strong enough for heavy traffic.



Vancouver is rapidly becoming one of the important ports of the world. From its wharves steamers go to every part of the world. This is the steamship Empress of China, built for trade with the Far East, where one can transfer to another ship under the British flag for the journey to Europe.

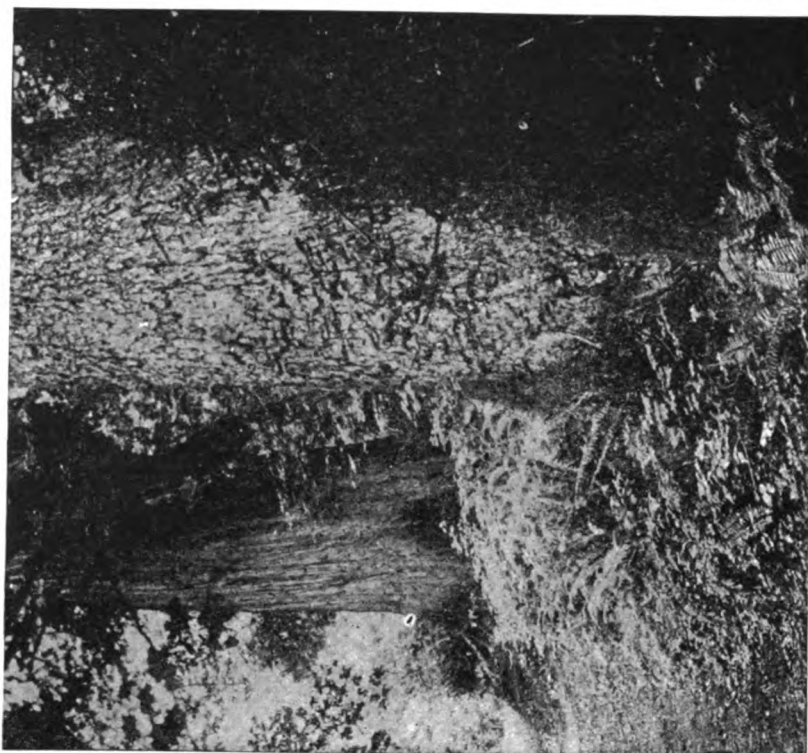
Pictures copyright by H. C. White Co.

## ICEFIELDS AND FORESTS IN BRITISH COLUMBIA



In another part of our book you were told of glaciers, those great rivers of ice which slowly flow down from the mountains to the lowlands. Here is the great Asulkan Glacier, in the Selkirk Range in British Columbia. Crossing a glacier is dangerous as besides the slippery footing underneath, there are great cracks into which the traveler may fall.

Pictures copyright by H. C. White Co.



The lumber interests of British Columbia are very important. Near the city of Vancouver is Stanley Park, in which grow some of the finest trees in America. The climate is mild and moist and vegetation grows with almost tropical luxuriance. The ferns you see are very tall, though because of the size of the tree you do not realise their height.



western side is heavily timbered. The Coast Range has a parallel mountain chain in the partially submerged Island Range which is represented by an archipelago of islands great and small, the most prominent being Vancouver and Queen Charlotte Islands.

#### SCENERY

No better view of the mountains can be obtained than by following the Canadian Pacific Railroad in its course through Kicking-horse Pass and on through the various ranges to the city of Vancouver. After following a stretch of rolling prairies the road winds for some distance through the foot-hills before it reaches Banff and then plunges into the fastnesses of the Rockies.

Banff, the gateway to the Canadian National Park, is noted as a tourist resort. The scenery in the vicinity is beyond description. Mountain peak rises above mountain peak, while rushing waters and lakes give colour to the scene. Then for several hundred miles a continuous panorama of bewildering magnificence is presented which no pen can well describe. Everywhere steep forest-clad slopes rising through lofty glaciers are capped with perpetual snow. Lakes with water as clear as crystal and walled in by tremendous cliffs relieve the scene. Mighty waterfalls and cataracts of wonderful beauty din the air with their loud clamour. The marvellous grandeur is enriched by little lakes literally nestling amid the clouds and encircled by majestic peaks. Glaciers, palisades of hanging snow set amid surroundings of wild Alpine grandeur add to the enchanting array. Nothing in Switzerland is more beautiful than the glaciers of the Canadian Rockies and the Selkirks. Through still more wondrous glacial fields, startling precipices, snow-capped peaks, wide forest areas with gigantic firs and cedars, rushing waterfalls, mountain streams, rivers and lakes, one is not aroused from the enchanting scene until Vancouver, the western terminus of the Canadian Pacific Railway, is reached.

#### VANCOUVER

Vancouver (100,000) is beautifully situated on the shores of Burrard Inlet, one of the deep fiords of the coast. The

Inlet is a half mile wide at its mouth and opens out to two miles in front of the city. It makes Vancouver harbour, land-locked, sheltered from all points, roomy, deep enough for the largest vessels, open all winter, the finest harbour in the world. This infant city, the child of the Canadian Pacific Railway, does not appear in the census of 1881 for it was then the site only of giant firs and cedars. In 1891, the population reached fourteen thousand, and this year has passed the hundred thousand mark.

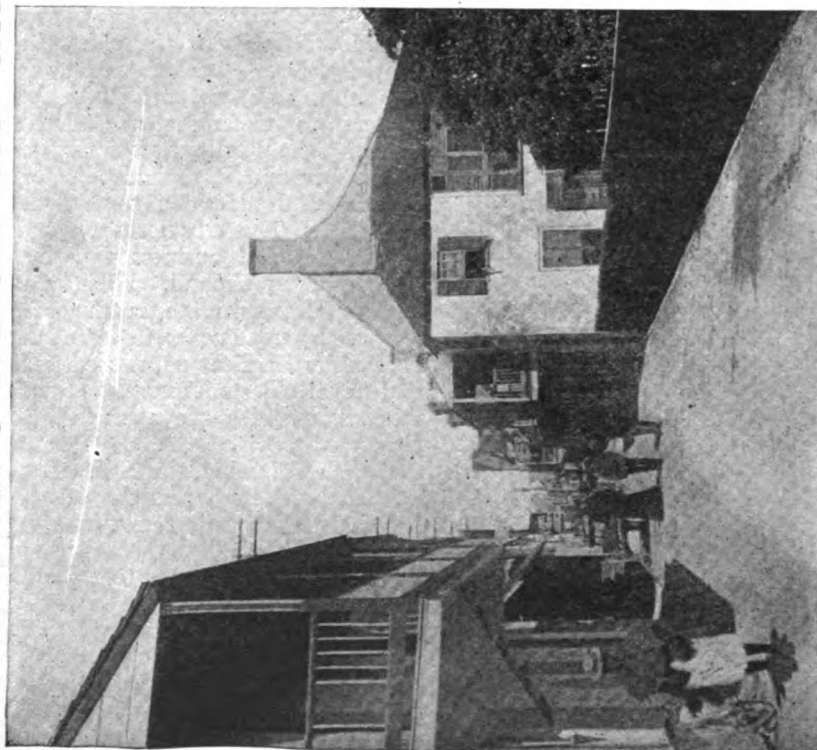
Vancouver is a thriving, progressive city full of overflowing with wonderful vim and enterprise. The public buildings, business blocks, churches, schools, libraries and clubs are equal to those of the older cities in the East. The city has connections by land and sea with all important points on the coast and in the interior. Vancouver has a very complete electric railway system and a sewerage system constructed on modern lines.

#### VICTORIA

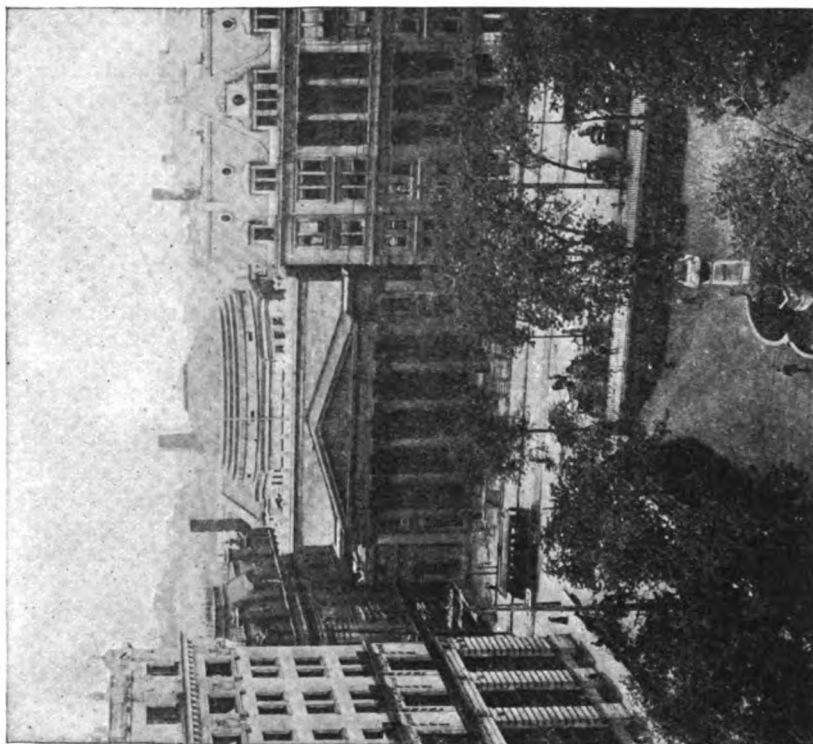
Victoria (50,000), the capital of British Columbia, is a beautiful city situated on the southeast corner of Vancouver Island. The city is the oldest in the province, dating back to 1846, when it was known as Camosun, a Hudson's Bay Company's trading post. There is none of the bustle and enterprise of Vancouver and it reminds one of the quiet restful places in some parts of the East. The city loses much in a commercial and business way by not being on the mainland. With its wide, quiet streets, private residences surrounded by small parks, its large number of wealthy Englishmen, retired military and naval officers, Victoria has nothing in common with the average western city.

British Columbia, the Switzerland of America with its enchanting scenery, is becoming a favourite resort for tourists. Scenery is not all, but these picturesque mountains with their untold wealth of minerals and forests may make the province the wealthiest of the Dominion. This is saying much, for some of the other provinces will soon count their population by the millions, instead of by the hundred thousand as at present.

## TWO FAMOUS OLD CITIES OF NORTH AMERICA



The first city founded in the United States was St. Augustine, where Spaniards settled in 1565. This is one of the quaint old streets, which seems to belong to another world and another time.



Here is another view of the famous old city of Montreal, which to the people of the United States seems more wonderful than any of their own cities. The great building in the centre is the City Hall, and the monument in the foreground is to Nelson.

Pictures copyright by H. C. White Co.

# The Child's Book of POETRY

## A CHILDREN'S POEM BY THACKERAY

IT is as a great author of fiction and romance that we all know Thackeray, some of whose famous stories have been retold in the "Child's Story of Famous Books." He was also a writer of poetry, chiefly of a lively and humorous kind, of which an example is given in the poem "A Tragic Story;" but no writer has excelled him in the power to invest common objects of everyday life with the interest that arises from sentiment and affection. In the poem which we give here we have an admirable example of his power in this direction. It is touched with true human feeling, and although cane-bottomed chairs are now rather out of fashion, the sentiment attaching to any old chair, in which we recall the presence of some departed loved one, will never go out of fashion. The poet's mention of "rich Latakie" in the seventh verse refers to the kind of tobacco he was supposed to be smoking in his snug little room high up in a London dwelling.

## THE CANE-BOTTOMED CHAIR

IN tattered old slippers  
that toast at the bars,  
And a ragged old jacket  
perfumed with cigars,  
Away from the world, and its toils and  
its cares,  
I've a snug little kingdom up four pair  
of stairs.

To mount to this realm is a toil, to be  
sure,  
But the fire there is bright, and the air  
rather pure;  
And the view I behold on a sunshiny day  
Is grand through the chimney-pots over  
the way.

The snug little chamber is crammed in all  
nooks  
With worthless old knicknacks and silly  
old books,  
And foolish old odds, and foolish old ends,  
Cracked bargains from brokers, cheap  
keepsakes from friends.

Old armour, prints, pictures, pipes, china,  
all cracked,  
Old rickety tables and chairs broken-  
backed;  
A twopenny treasury, wondrous to see.  
What matter? 'tis pleasant to you, friend,  
and me.

No better divan need the Sultan require  
Than the creaking old sofa that basks by  
the fire;  
And 'tis wonderful, surely, what music  
you get  
From the rickety, ramshackle, wheezy  
spinnet.

That praying-rug came from a Turcoman's  
camp;  
By Tiber once twinkled that brazen old  
A Mameluke fierce yonder dagger has  
drawn,  
'Tis a murderous knife to toast muffins  
Long, long, thro' the hours, and the night,  
and the chimes,  
Here we talk of old books, and old friends,  
and old times,  
As we sit in a fog made of rich Latakie, [me.  
This chamber is pleasant to you, friend, and

CONTINUED FROM 5492



But of all the old sweet  
treasures that garnish  
my nest,

There's one that I love  
and I cherish the best;

For the finest of couches that's padded  
with hair

I never would change thee, my cane-  
bottomed chair.

'Tis a bandy-legged, high-shouldered,  
worm-eaten seat, [feet;  
With a creaking old back and twisted old  
But, since the fair morning when Fanny  
sat there,  
I bless thee, and love thee, my cane-  
bottomed chair.

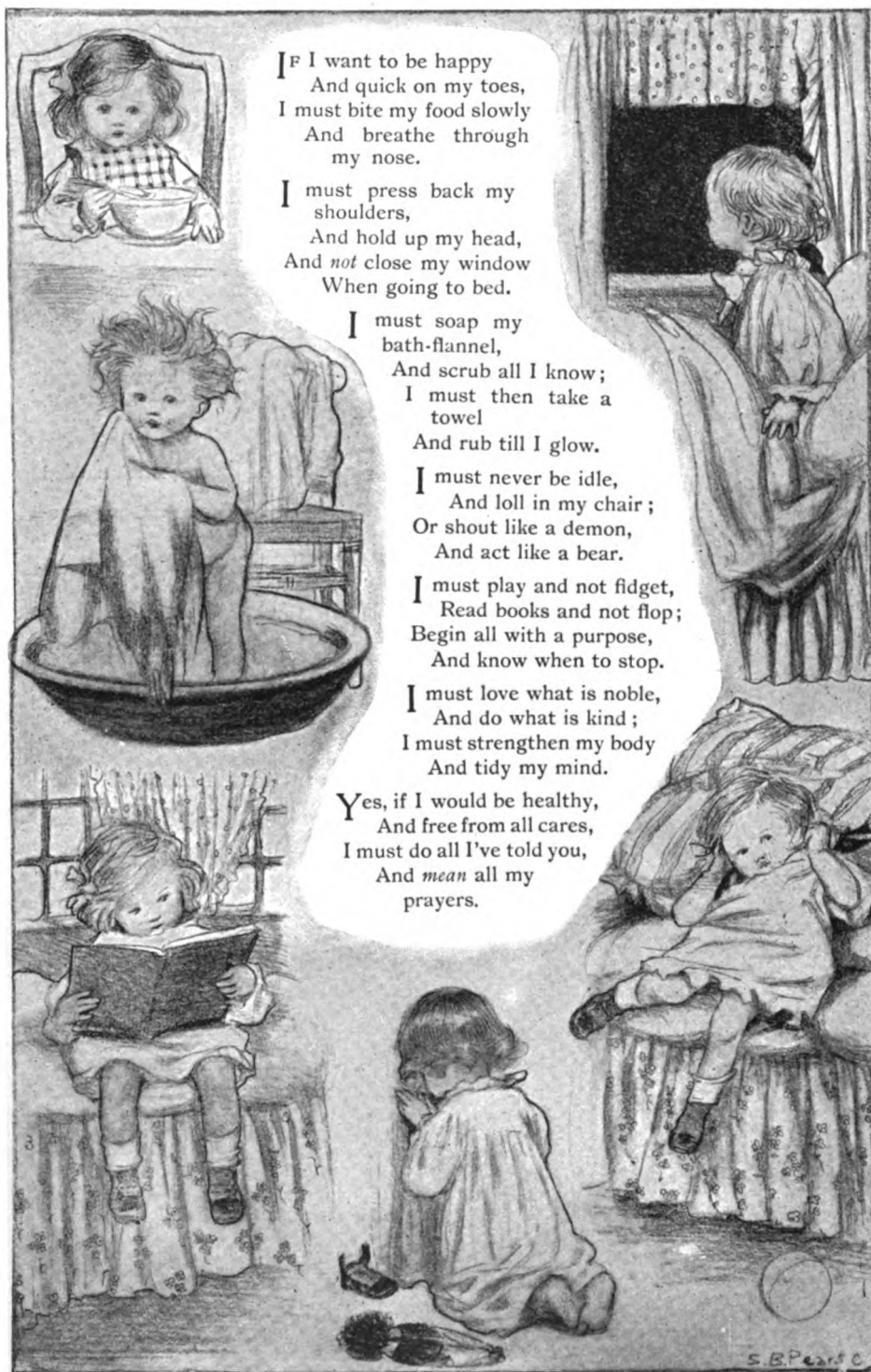
If chairs have but feeling in holding such  
charms,  
A thrill must have passed thro' your  
withered old arms;  
I looked, and I longed, and I wished in  
despair;  
I wished myself turned to a cane-  
bottomed chair.

It was but a moment she sat in this place;  
She'd a scarf on her neck and a smile on  
her face;  
A smile on her face, and a rose in her hair,  
And she sat there and bloomed in my  
cane-bottomed chair.

And so I have valued my chair ever since,  
Like the shrine of a saint, or the throne of  
a prince;  
Saint Fanny, my patroness, sweet I declare,  
The queen of my heart and my cane-  
bottomed chair.

When candles burn low and the company  
is gone,  
In the silence of night as I sit here alone—  
I sit alone, but we yet are a pair;  
My Fanny I see in my cane-bottomed chair.  
She comes from the past and revisits my  
room;  
She looks as she then did, all beauty and  
bloom;  
So smiling and tender, so fresh and so fair,  
And yonder she sits in my cane-bottomed  
chair.

# WHAT EVERY WISE CHILD SHOULD DO



IF I want to be happy  
And quick on my toes,  
I must bite my food slowly  
And breathe through  
my nose.

I must press back my  
shoulders,  
And hold up my head,  
And *not* close my window  
When going to bed.

I must soap my  
bath-flannel,  
And scrub all I know;  
I must then take a  
towel  
And rub till I glow.

I must never be idle,  
And loll in my chair;  
Or shout like a demon,  
And act like a bear.

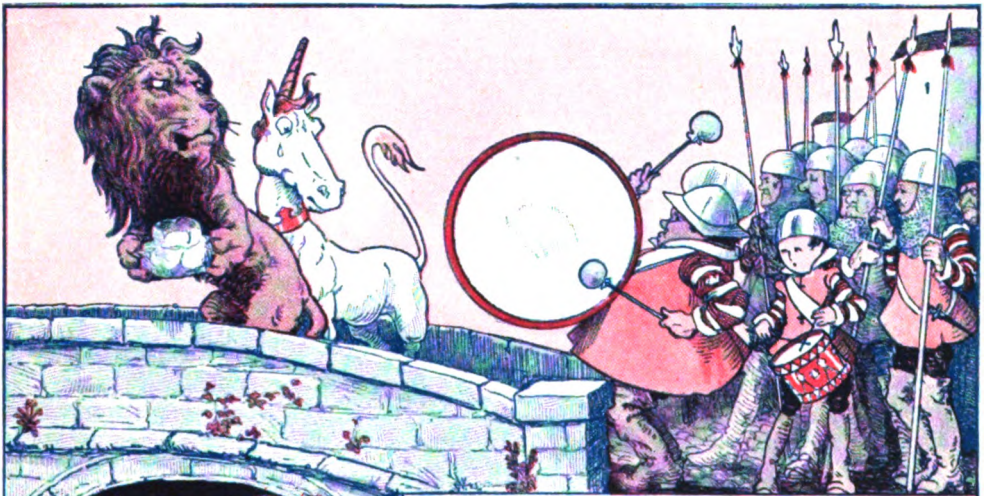
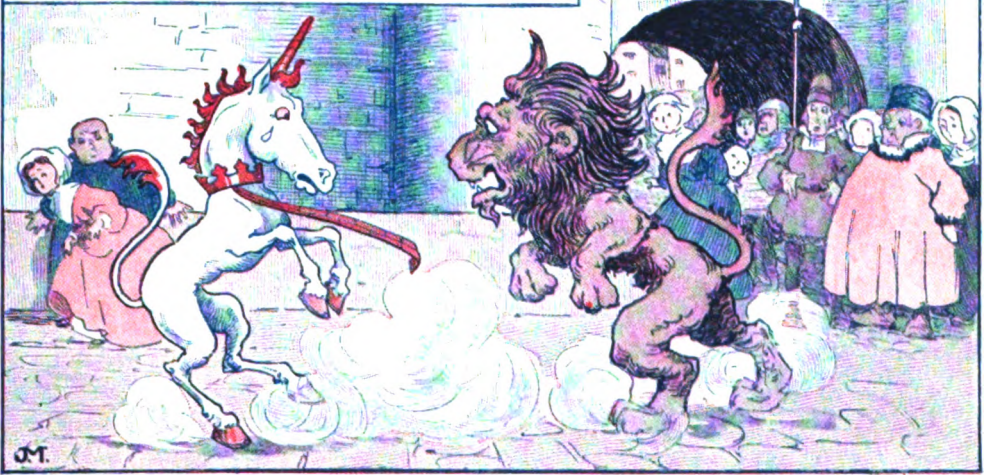
I must play and not fidget,  
Read books and not flop;  
Begin all with a purpose,  
And know when to stop.

I must love what is noble,  
And do what is kind;  
I must strengthen my body  
And tidy my mind.

Yes, if I would be healthy,  
And free from all cares,  
I must do all I've told you,  
And *mean* all my  
prayers.



The Lion and the Unicorn  
Were fighting for the Crown ;  
The Lion beat the Unicorn  
All round about the town.



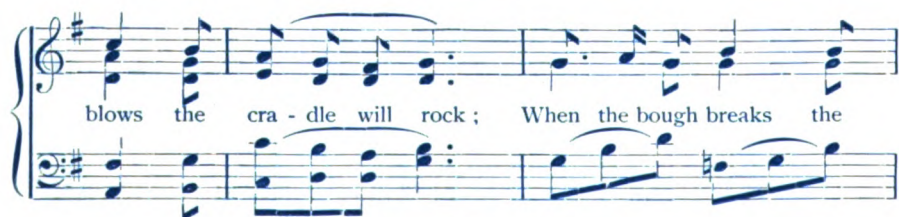
Some gave them white bread,  
And some gave them brown ;  
Some gave them plum cake,  
And sent them out of town.



# Hush- Habye Baby on the

# Tree Top

Very Soft





A WEDDING IN THE HILLS OF SCOTLAND DURING THE PERSECUTION OF THE COVENANTERS

## BRAVE GRIZEL HUME THE GIRL WHO WENT OUT BY NIGHT

WE may search all history without finding a more charming story of heroism and devotion than that of Grizel Hume. Most of us might hope to be heroes or heroines for the time being in some desperate situation, but Grizel was a heroine all her life. She was born at Redbraes Castle, Berwickshire, on Christmas Day, 1665, and was the daughter of Sir Patrick Hume, or Home; we are not certain now about the spelling. There were eighteen children in the family—and all of them, save two, were younger than herself. She, however, was the special favourite of her father. She showed such extraordinary intelligence that he entrusted her, when she was quite a tiny girl, with secrets which involved his very life, as well as the fortunes of his family.

For we must remember that at this time Scotland, and a great part of England, were greatly excited over what is known as the Covenant. After the Reformation, religious men in Scotland bound themselves by this Covenant to do all in their power to oppose the Pope, and to foster and extend the Protestant faith. When Scotland joined England against Charles I., the Covenant was agreed to by both nations; and when Charles II., after his banishment, was allowed to go back into England to take

the throne, he signed the Covenant on landing, and signed it again on being crowned. As soon as he had gained the throne, however, this dishonest king declared the Covenant illegal, and forbade people, on pain of death, to be bound by it. The result was practically civil war. Soldiers were sent to put down the Covenanters. They hunted and killed them with great cruelty, and Scotland became a land of blood and tears.

Grizel's father held to the Covenant, and was several times imprisoned as the result. When Grizel was only ten years old she knew all that was happening. She was filled with sympathy for the persecuted Covenanters, and burned with wrath against the cruel soldiers. At twelve years of age she was called upon to play her first heroic part in life.

A splendid character named Robert Baillie, a bold Covenanter, had been cast into Edinburgh Prison. He had made the mildest attempt to obtain justice for a Covenanting minister who had been wrongfully arrested through the false charges of a scoundrel. The authorities did not bother about the minister; all they wanted was to get hold of Baillie. They threw him into prison, and detained him for a long time. Eventually, after many pretended trials, they took him, one day,

to court in his night-clothes, when he was at death's door, tried him, and sentenced him to be hanged and quartered. And the shameful sentence was carried out upon the dying man. That, however, happened after the date at which our story opens.

At the time that we first meet little Grizel, Baillie was in prison, and it was necessary for Sir Patrick Hume to communicate with him. Sir Patrick dared not go himself, or the soldiers would have seized him as well. So brave little Grizel, this child of twelve, went in her father's place. Seeing a gaoler going into the prison, she popped in behind him and hid herself in the shadow of the cell until he had gone, then came forth into the middle of the cell and delivered the message which her father had given her.

In the cell with the poor prisoner there was a little boy—George Baillie, the prisoner's son. How he admired the bravery and skill of the little girl in eluding the gaoler and getting into the prison! She, on her part, admired the little boy, who was there sharing the misery of the cell with his father.

Grizel managed somehow to get safely out of the prison and to make her way back from Edinburgh to her father's home, taking the message which the prisoner had given her.

Having executed Baillie, the authorities now thirsted for the life of the valiant Sir Patrick; and about a year after the death of Baillie, the Humes heard that the soldiers were on their way to Redbraes Castle. To be captured would mean death, but how was he to escape capture? It was certain that he could not hide in or near the castle, for the soldiers would search every nook and cranny. Sir Patrick, his wife, and Grizel, and a carpenter named Winter put their heads together, formed a plan and decided on a hiding-place. They dared not let the other children or servants know it, for fear the soldiers should get the secret out of them.

Winter and Grizel went at dead of night to Polwarth Church, which was a mile and a half from the castle. There they carried a bed and bedclothes, and made a hiding-place for Sir Patrick in the family grave of the Humes in the church. In that resting-place of the dead, the living man was to take up his abode. He went as soon as the retreat was prepared, and when the soldiers arrived

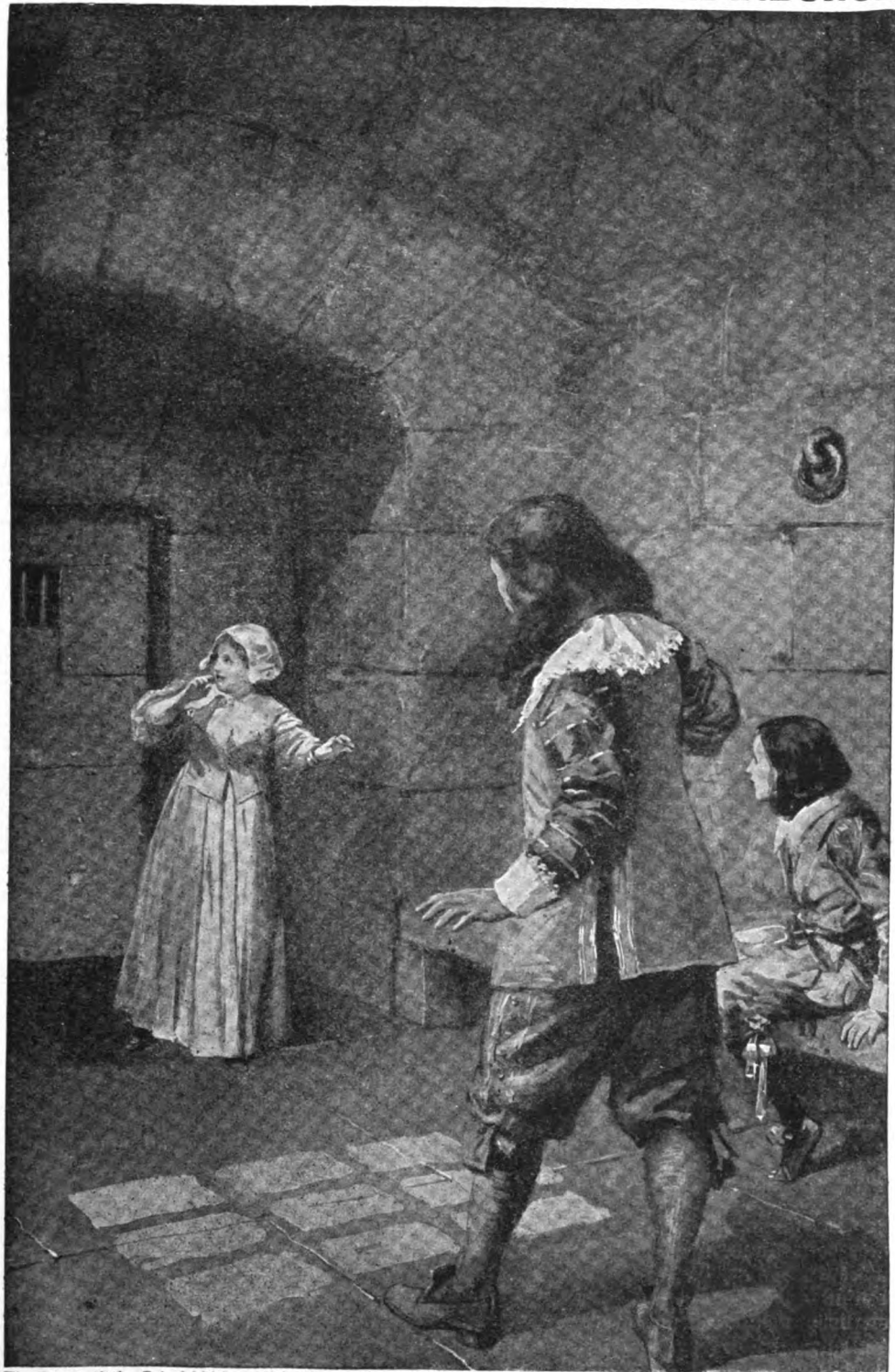
at the castle not a trace of him could they find. They could only believe that he had fled from the neighbourhood. Meanwhile Grizel's father was safe in the church vaults, but he had to be fed. He could not return to the castle, for the soldiers lingered in the neighbourhood; but where he was he might as well be dead, so helpless was he. Brave Grizel was equal to this difficulty also.

Night after night she carried food to her fugitive father. The task of getting this food was in itself very hazardous. It would not have done to take it from the larder, for the servants would have missed it, and have had their suspicions aroused. The only way was for poor Grizel to smuggle the food off her plate, and into her lap, as she sat at meals. That was her method, and once she was nearly discovered. Her mother gave her a very bountiful plateful, and presently one of her brothers, looking at her plate, noticed that practically the whole supply had disappeared, and called the attention of the others to what he thought was Grizel's greediness in eating so much with such speed.

But the smuggling of the food to her father was not Grizel's chief difficulty. Every night, at twelve o'clock, she used to set off to walk the lonely mile and a half to the church. Of course, she had to go alone. That in itself was a terrible trial for the nerves of a young girl. The thought of passing through a graveyard at that hour of night would have sufficed to scare most people. But, in addition, Grizel ran the danger of discovery by the soldiers who were in the neighbourhood, and of meeting country people out poaching, who would have followed and spied upon her. Then there were dogs at large to bark at her and increase her terrors. But she smothered all her fears, and, night by night, went bravely on her way to feed her father, to stay and talk for some time with him, to cheer him with such news as she could tell him, and to inspire him with courage to bear his dreadful captivity.

At last Grizel thought it would be safe for her father to return to a hiding-place in the castle. So she and Winter dug a great hole in the basement of the castle. They were afraid to use a spade lest the noise should be heard; so they used their finger-nails for the work. Early every morning they would take up, in a cloth, the soil which they had

## GRIZEL HUME IN THE PRISON AT EDINBURGH



The brave little Grizel hid herself in the shadow of the cell until the gaoler had gone. Then she came forth to give her father's message to the prisoner. How the prisoner's son, who was in the cell, admired the brave girl!



dug out during the night, and empty it away in the garden, and then cover over the hole so that nobody should find it. At last the hole was made of sufficient size to admit a sort of big box. In this they placed bed and bedding, and then, one night, Sir Patrick crept home and hid himself in the new sanctuary. For a week this refuge held good, but water drained into the hole and made it impossible for Sir Patrick to remain, so he now determined to flee abroad for safety.

Grizel altered his clothes to make them like the clothes of a peasant, and, when news came to the house that the soldiers were again on the hunt for him, he set out. After many dangers he made his way to London, and, giving his name as Dr. Wallace, got a passage on board a ship which took him to the Continent. His estates were now declared forfeit to the Crown, and the family were left without means. Grizel and her mother went boldly to London and pleaded for support, and eventually they were granted \$750 a year out of the estate.

Sir Patrick was not idle in the meantime. He joined with others in an invasion of Scotland, but this was defeated, and he had to retire to Ireland, accompanied by his wife and all the children but one, a daughter who was left in Scotland. But the others could not rest without her, so off to Scotland went Grizel, alone into all the dangers of that unhappy country. She rescued her sister, collected some money owing to her father, and then set out to Holland, where the others had gone in advance. After a journey of many perils she joined them, and for nearly four years the family lived in Holland. Grizel was the little mother of the family.

## THE MAN WHO LOVED THE HOUSE

HE had a poor little name—William Twopeny—but in other ways he was rich. In 1797, when he was born at Rochester, many great artists were at work in England; and Nelson, always ready to save his country from Napoleon, was soon to win the great battle of the Nile, August 1, 1798.

When Twopeny was eight years old, in 1805, Trafalgar was fought and won, and Nelson, in his last words to his sorrowing officers, said: "Thank God, I have done my duty!"

Then Wellington took up the burden of England's fight for life; and Twopeny

She relieved her mother of the cares of the household, and, when she had any time to spare, she studied music and languages and wrote quite charming poetry. The family were very poor, of course, but with such a girl to inspire them, how could they help being happy? Grizel used to say that those years of poverty were the happiest of her life.

She had by this time grown into a beautiful and accomplished young woman, and more than one handsome young man sought her hand. But little George Baillie had, by this time, developed into a handsome, brave young fellow, and, an exile from home, was serving in Holland in the Guards of the Prince of Orange. The friendship begun in childhood between himself and Grizel had ripened, and, poor as they were, the two loved and hoped.

At last their reward came. The Prince of Orange entered England with an army, and the wretched King James II., who had succeeded to the throne at the death of his brother, Charles II., was driven from the land. Then those good and brave men who had suffered in the evil days were restored to their estates. The Princess of Orange so admired Grizel that she wished to make her a Maid of Honour, and always have her at Court.

But Grizel preferred to return to Scotland with her father, who was now created Earl of Marchmont, and made Lord Chancellor of Scotland. Grizel, as an earl's daughter, now became Lady Grizel Hume. But she was not long to be known by that name. George Baillie had returned to Scotland, and the sweethearts were at last able to be married, fifteen years after they had first met, as boy and girl, in a prison cell.

was eighteen when peace and safety were gained at last on the stricken field of Waterloo, June 18, 1815, at sunset. Think of those times, read about them, and you will see that it was a noble education to be a child then; for boys and girls were taught by danger to understand that the word *home* meant *country* also. If Napoleon had won, there would have been no British homes in Ireland and Scotland and England.

William Twopeny never forgot that lesson, though he lived to be an old man, dying in 1873. His heart was always young, and from first to last



he worked very hard, learning to know what England was like in the past; how her people lived at home, and how they made beautiful things—houses and cottages and churches, barns and bridges, furniture of many kinds, and songs, plays, and poems, and beautiful pictures.

There was little that he did not know about the story of the English houses; even a few words of help and advice from him were worth years and years of loving patience in a search after truth—after knowledge; and so a great many persons, many of them distinguished, came to him for help when books were

accordance with his last wishes; and anybody who goes there can see them to-day. There are twenty-eight albums in all, and they contain many hundreds of exquisite drawings; yet their beauty is little known. The children of England have not yet heard of them, and the grown-ups are too busy to visit them. Twopeny, then, is a kingdom to be rediscovered; it is he who rules over the realm of home through six centuries of its long history.

And what do these books represent? Houses of English workmanship from the twelfth century to the reign of Charles II. Rooms, too, and beautiful



A BEAUTIFUL DRAWING BY WALTER TWOPENY OF POUND'S BRIDGE, NEAR PENSURST, IN KENT

written on English churches and English homes. Yes, and we, too, must go to him now, not once, but many times, to make friends with his beautiful work, and to see how he travelled from London to many parts of England, often on foot, drawing with a pencil all the most beautiful things he could find, until his many albums of sketches made a history of English homes and churches, from the twelfth century to the seventeenth.

A year after his death these albums of drawings were presented to the Print Room of the British Museum, in

details, like windows and doorways, large fireplaces, within which logs and faggots burned on fire-dogs; and wall-paintings, stained glass, and charming old furniture, which the generations have neither broken nor worn out. And there are castles, and huge barns built like churches, with naves and aisles, setting us thinking of those days when England owed all her riches to her fields, so that foreigners used to say that her wealth was wheat and wool, and that she grew and banked money on the backs of her sheep. Other drawings represent village

churches, with tall spires shooting up toward the sun, as if they, like skylarks, wished to be near at the same moment to the points of heaven and home.

Only those who see his pictures can understand the delicate strength and

beauty that William Twopeny put into his swift pencil-work. He drew as a musician plays, understanding all and loving all; there was magic in his touch, and a great sympathy in his heart. One thing he never could forget, and it is a thing that we must learn to see with our own eyes. It is this: that Twopeny realised that he, with his pencil, must make real the life in all things. For instance, the life in clouds is their lightness; we see that they are not heavy, but float overhead, and are blown about by the winds. Yet clouds in a

great many pictures look as heavy as the walls of a house, or as solid as the trunks of oak-trees. Those pictures are bad, and we must dislike them as Twopeny did.

Or, again, what is the life of a pool of water? Its liquid transparency; it looks like a brilliant eye in the fields, gazing up at the heavens and changing with their colour. Artists must show that in their pictures; water must look like water, and not like hard, slippery ice.

And the reality of many noble old houses must come into the artist's pictures too. We see from Twopeny's drawing that a house stands firmly on solid land, and that it is safe when tempests beat upon its walls. We see, too, that the stones are worn by time and use, but that weather-stains and mosses have hidden many a scar. And artists must show all this if

their work is to be good, and to be loved. But when you take a pencil in your own hand and try to draw with its lead point, you feel weak and foolish, perhaps, for how can so much be done without bright colours, with just a few lines in different shades of grey?

How, indeed! Yet Twopeny did it. He, with his pencil, could do whatever he wished, swiftly, and with ease. So let us make friends with his delicately strong work, and learn to love what he loved. It is worth while. But what about the man himself? Was he prosperous and happy, or did he die of despair, misunderstood, neglected, and desperately in need of money? Unluckily, very few facts have been discovered. There is no contemporary account of his life, though his

drawing and his knowledge helped to make important books on English architecture. But three or four things are beyond doubt. Twopeny was well-to-do, for he was able to be a patron to

another artist, J. W. Archer, who received from him a commission to make twenty drawings a year of "Old London." Archer was a clever and charming draughtsman, and it is pleasant to know that he won so much friendly help from Twopeny. His work also can be seen in the Print Room of the British Museum. We learn, again, that Twopeny's father was a student of the past, a devoted antiquarian, living at Rochester, but that Twopeny himself made his home in

London. As we have seen already, he travelled much in all parts of England. We can follow his travels best in his work, which, after all, is the best autobiography that a true man can write.



OLD HOUSES AT CHESTER



STEPS AT POWIS CASTLE IN WALES



The Fruit of the Striped Maple.

CONTINUED FROM PAGE 5572.

## AMERICAN TREES IN SUMMER

OUR country is so vast that the plant life in one corner in no way resembles that of another. Speaking in general terms, each corner, or desert, or mountain range, or river-bottom, or sea-beach has its own variety of soil and climate and a plant population that has fitted itself for ages to withstand the trials of life in that particular locality, be it large or small.

These great divisions of plant life are called "floras," and so distinct are they, except where they mingle on the border-lands, that skilled botanists say that if they were taken blindfolded on a magic carpet to any part of North America, by looking around at the plants, they could soon tell pretty nearly their whereabouts. If they should be dropped in a grove of the trees which we have pictured, for instance, they would be sure that they were in the northeastern part of the United States, and they might guess that they were within a hundred miles of New York.

Let us imagine that the botanist's carpet has descended in the scraggy branches of a sweet-gum tree; he would know that he was east of the Mississippi and not far north of the Hudson, at least, for the sweet-gum does not go much farther in that direction. On

the other hand, if he found the lovely little striped maple he would know that he must be north of Georgia, for this tree rarely travels further south. The odorous bayberry would warn him that he was near the coast; and tree after tree would add its evidence to help him to locate himself.

In this way, we have come to think of certain trees, or groups of trees, as always to be found in certain parts of America. When we speak of the southeastern coast, we promptly remember the tufted palmetto; while the persimmon and magnolia, and the moss-draped live-oak are always present in our dreams of the Mississippi bayous; and of course we never forget the white pines of Maine.

But Canadians always remember the maples, for these trees grow so abundantly in their country that a maple leaf has been chosen as the emblem of the Dominion. They have many varieties of maple. One of them we frequently read about in hunters' tales, but usually termed moose-wood. The moose love to eat its great, tender buds that are close-wrapped in crimson scales. Although it rarely is seen growing alone, it is readily recognised in the copses by its smooth green bark, striped with white, and by its great,

Copyright, 1911, by M. Perry Mills

soft, three-lobed leaves. It is almost a shrub when compared with the great red maple and the sugar maples. The former is one of the first trees to turn its coat and warn us of the coming of winter, showing vivid patches of red here and there very early in autumn. The sugar-maple, on the contrary, is inclined to become golden, or pale scarlet, and often its foliage is mottled with both colours. While the red maple adorns itself with tufted, deep-red blossoms before the leaves unfold, the sugar-maple drops its tassels of honey-coloured flowers beneath the newly opened foliage.

#### THE MAPLE

A well-grown field sugar-maple is a magnificent tree, shaped something like a pyramid with solid-looking, dark foliage. Its leaves are very simply lobed with squarish divisions. Its pale-tinted wood is hard and very heavy, and as we all know, is made into hardwood floors, furniture and the like; those two varieties called "curled" and "bird's eye" being especially valuable. But altogether the most interesting thing about the sugar-maple is the sugar! It is a small New England farm that has not a sugar-bush somewhere; and it is one of the pleasant duties of the farmer to go out in the snowy springtide, and by piercing holes in the bark of the sugar-maple, and fixing little spouts therein, to draw off the sap that is rising upward just under the rough bark.

The sap in this stage is colourless, thin and faintly sweet to the taste. By careful boiling the water in the sap is got rid of, and in time the liquid turns to sugar. The sugar-boiling is a time of gaiety for young folks, who frolic in the snow and about the huge bonfires under the sap-kettles, and eat maple sugar in every form they can invent.

The farmers learned this art from the Indians, who made the sugar, and sold it, dark-brown and coarse and filled with bits of twigs and leaves, but nevertheless delicious, in little birch-bark boxes. Sometimes they took out the water from the sap by freezing it night after night, each morning throwing away the cake of ice that had formed and

which contained most of the water, leaving the sugary thick fluid. They even ate scrapings of the sappy, sweetish bark, as the southern negroes chew sugar-cane. Some Indians have a curious habit of putting maple sugar on their meat or in soup, instead of salt, which they do not like, as well as eating it as we do, on hominy or boiled wild rice.

#### THE LOCUST

Another sweetmeat for the Indian children was the pod of the honey-locust. This is a handsome tree that has travelled far from its original home in the middle west, and has spread widely its flattened top in many a park and highway. The leaves are composed of many small leaflets, among which the clusters of long, flat, black and twisted pods are easily seen, especially as they stick to the branches during the winter. They are filled with a sweetish, watery pulp in which the hard seeds lie, and this is pleasant to the tongue. The honey locust is distantly related to the acacias and mimosas that travellers in African deserts tell us about. We remember that they also speak of the vicious thorns that endeavour to protect the feathery foliage, but which the giraffe ignores when he reaches over the mimosa tops with his long neck.

Our locust, like them, is well armed with enormous spines, polished and branched, every spur being quite capable of stabbing to good effect. They appear in the most unlikely places on branches and trunk, often in groups. Unlike the common locust, the flowers are inconspicuous, but its trembling foliage, which scarcely casts a shadow, gives the tree a charming delicacy of outline. We may notice that the pale, little leaflets rise up as the sun sets and press their upper surfaces together. This is called their "sleep," and prevents the escape of heat from the delicate leaves at night, as well as reduces the chance of injury from excessive coolness, heavy rains, and so forth.

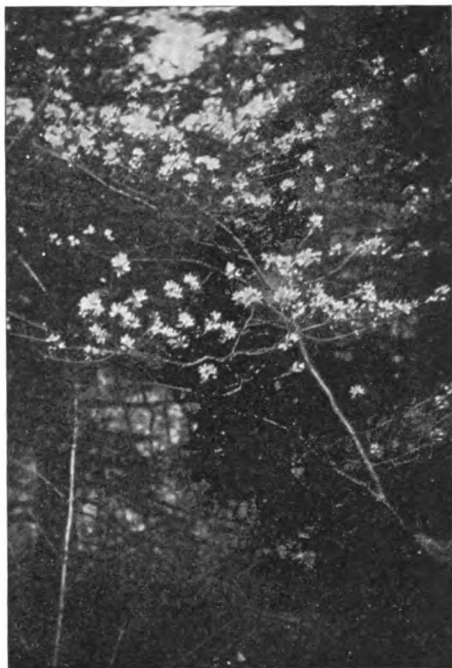
#### THE TULIP-TREE

Some of our trees have leaves of so unusual a shape that if we once see them, we shall never forget them. Such are those borne by the beautiful tulip-tree,



#### POISON SUMACH

A shrub or small tree growing in swamps, that is to be avoided. It is poisonous to the touch. It has up-standing leaflets on red stems, and white berries.



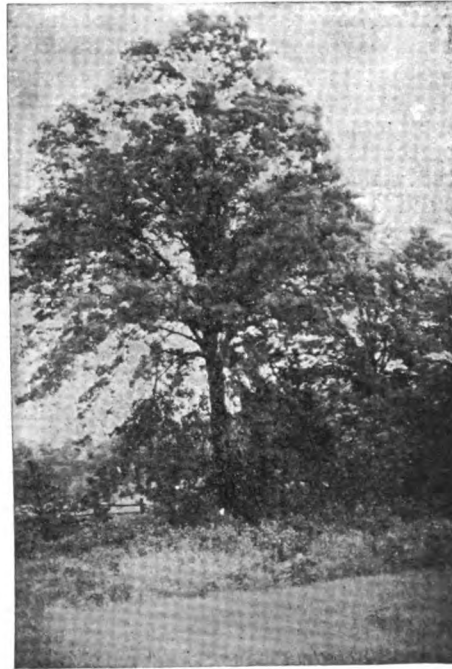
#### SHADBUSH

A small tree or shrub, which blooms early in the spring. Its white petals are very narrow. The reddish fruit is quickly eaten by birds, who rarely leave a berry on the tree.



#### ASH

A handsome tree, which usually grows in moist soil. Its elastic tough wood is valuable for many purposes. The European ash has many myths told about it.



#### PIN OAK

A common eastern oak, readily known by its deeply cut, rather small leaves, and its drooping lower limbs. It is frequently planted as a park and street tree.



which one might describe as square in general outline, with a notch taken out of each side and another at the tip. They have changed but little in shape since prehistoric days. Each leaf comes out of the bud folded upon itself, and within an oval case of translucent tissue, which splits to let the swelling leaf out, the two halves remaining at the base of each leaf-stalk for some time. These leaves tremble like those of the poplar, and the tree is often called "white" or "yellow" poplar. It bears very handsome flowers, on the tips of its upturned branchlets. They much resemble tulips in shape and are brilliant yellow, with a splashing of orange and pale-green at the base of the cup; the sap-green tone of the foliage about each flower harmonises most charmingly with it.

This tulip-tree is one of the most magnificent trees in our forests, growing especially large in the Ohio Valley. In the prime of life, if it has had sufficient moisture and room, it forms an almost perfect cone from the ground to its topmost spray. It is famous, moreover, for the height and unbroken straightness of its trunk, that rises like a column, no matter how shapeless and broken the head may become. This was observed by the Indians, who took advantage of it, and of the softness and lightness of the boles, by digging great canoes out of them. Carpenters usually refer to the lumber of the tulip-tree as "white wood" and it is a favourite material for finishing the interiors of houses, especially when the woodwork is to be stained and painted, for it is easily worked smooth and soft. Panels of carriages are also preferably made from it.

Even after the leaves drift away, the tree retains its interest, for it is then seen to be laden with countless cones of fruit. When ripe, we discover that the cones are formed by row after row of upstanding winged seeds; and on dry, sunny days, we will find these seeds flaring in circles about the base of the little interior cone they have been overlapping. A stick thrown among them, or even a high wind, will send yellow clouds of the seeds to earth furiously twirling as they descend.

#### THE ASH

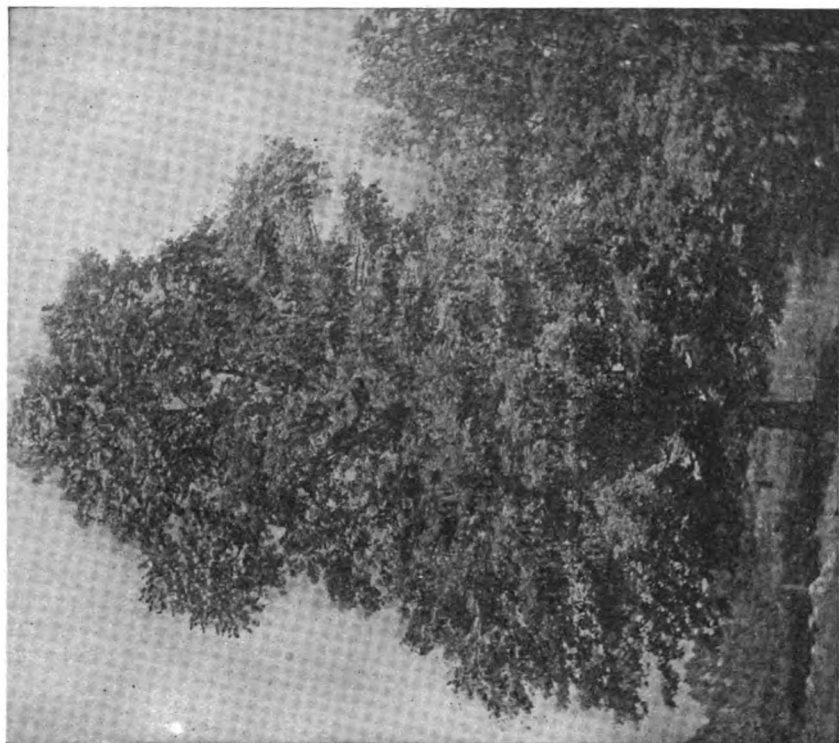
Other winged, paddle-shaped seeds come spinning to their last resting place from the ash trees. They are called "keys," and are gathered into great bunches on the branches, which sweep outwards in an interesting double curve and bear leaves of several large leaflets.

There is little of the romance that is gathered about the European ash included in our folklore, but it is justly valued for the strength, toughness and elasticity of its wood, which the Indians used for paddles, finding the tree very handy, as well, since it frequently overhangs water courses. Even nowadays oars are made of ash, as well as tool-handles, wagon-shafts and other parts of vehicles, besides many other things.

Some of us may have seen "alligator-wood" sold on city streets and wondered what it really is. The irregular twigs, gray and crested with wavy ridges of a material like ash-coloured cork, seem foreign and unlikely to grow in America; yet one can break them from trees within the limits of New York City, — trees bearing the sonorous Latin name "liquidambar," and the less romantic English title "sweet-gum." Both names refer to its resinous sap, which may be used in place of storax, an incense gum from over-seas.

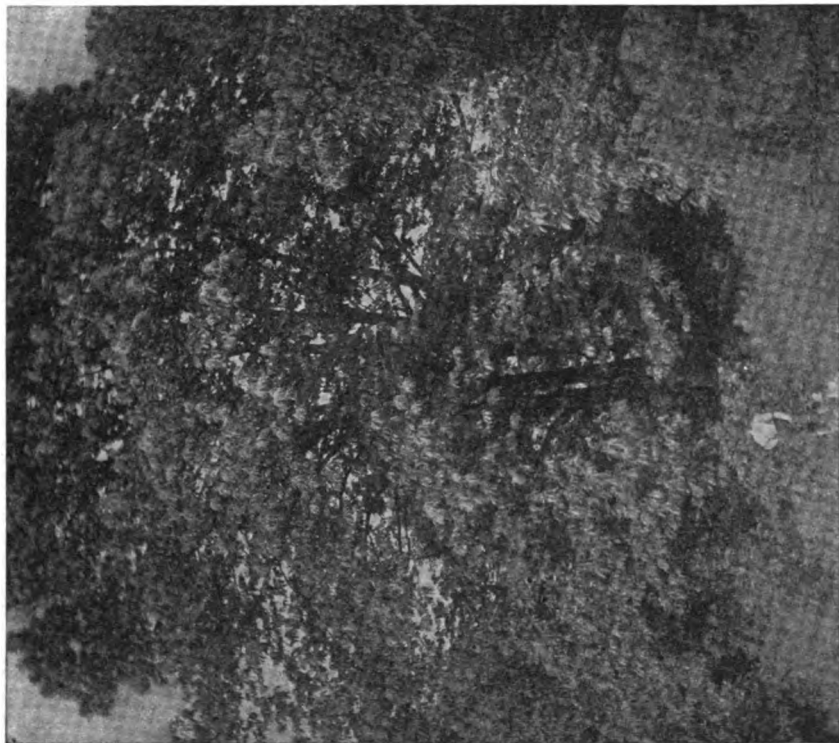
#### THE SWEET-GUM

The sweet-gum is another great forest tree, growing southward from Connecticut. In youth it appears to take a very slender, spire-like shape, but becomes less shapely as it ages. The leaves are cut deeply into several sharp-pointed lobes, and look like great green stars. In winter the ground beneath a sweet-gum is strewn with curiously spiked or horned balls that prove to be its fruit. A mass of two-beaked, hard capsules growing together like a sphere, is each fruit, and there is need of the number of them that we see swinging from the leafless twigs, for there are few fertile seeds in each sphere. In spite of its size, the wood of the sweet-gum is not valued highly except for some odd devices where its twisted and interwoven grain is useful, on account of its non-splitting habit.



**SUGAR MAPLE**

A tree which often grows on rocky hillsides. It furnishes a valuable wood, heavy and firm, as well as sugar which is made from its sap.



**CHESTNUT**

A fine forest tree, formerly of great value not only for its sweet nuts but for its wood, that is strong and easily split. The trees are rapidly disappearing.

## THE PIN-OAK

One could write a whole article on the oaks alone of this country. We have already spoken of the white and live-oaks. In this article we shall speak of the pin-oak, one of the most easily recognised and picturesque of our eastern oaks, and one that is frequently planted in highways and parks, because it grows quickly.

In the forests it generally chooses moist or even wet soil; and when youthful it is a pyramidal little tree with thickly-set branches standing out horizontally all around the stem, and a maze of little branchlets and spiky interwoven twigs. But when older, the lower limbs droop until they rest dying and broken against the trunk, while the middle and upper limbs rise in an almost unbroken series of sweeping lines, which gradually change from the droop of the hanging lower limbs to the uprightness of the vertical leader at the top. The small acorns falling from their shallow cups are sometimes striped; the pretty foliage is deeply cut, often nearly to the mid-ribs. The wood is strong, hard and light-brown in colour.

## THE POISON-SUMAC

While we are prowling about the margins of swamps looking for the pin-oak, we must take care not to run into, or handle, the *poison-sumac*. It is most dangerous in early summer, for then the flowers are opening, and even the flying pollen seems to be quite able to cause that itching inflammation of the skin which tortures some people so greatly, whether caused by the poison-ivy of the fence-posts, or by this relative of the swamps. The latter is a shapely shrub or small tree, often growing among alders and elders. Its rather long and bare, slender limbs bear at the top a great cluster of leaves composed of from seven to thirteen pointed leaflets. These *stand up* from the mid-rib in a way that is quite unlike the attitude of the leaflets in other trees. They are very glossy, of an odd shade of dark-green above, and have red stems, while the mid-rib from which they spring is also red. This is a point to be remembered! The little green flowers fall loosely in long spray-like panicles from

the axils of these leaves. In the fall, the leaves very early change to unusually brilliant shades of orange and vermillion, and when they have fallen to the mud, grape-like clusters of white berries still grace the top of the branches, tempting birds to eat them, and occasionally, I fear, tempting young folks with an eye for winter decoration, to pick them — with sad results — for root and branch, winter and summer, the poison-sumac is poisonous to the touch. Practically the same thing can be said of its more common cousin, the poison-ivy, which crowns fence-posts and old stumps and rears its slender branches among the thickets. This, however, has only thin leaflets, without the warning red stalks, but has the same gloss on its dark-green leaves, and assumes the same brilliant autumnal colouring.

W. H. Gibson has given us a catchy little jingle about the sumacs which may help us to remember the important differences between the poisonous and harmless sumacs.

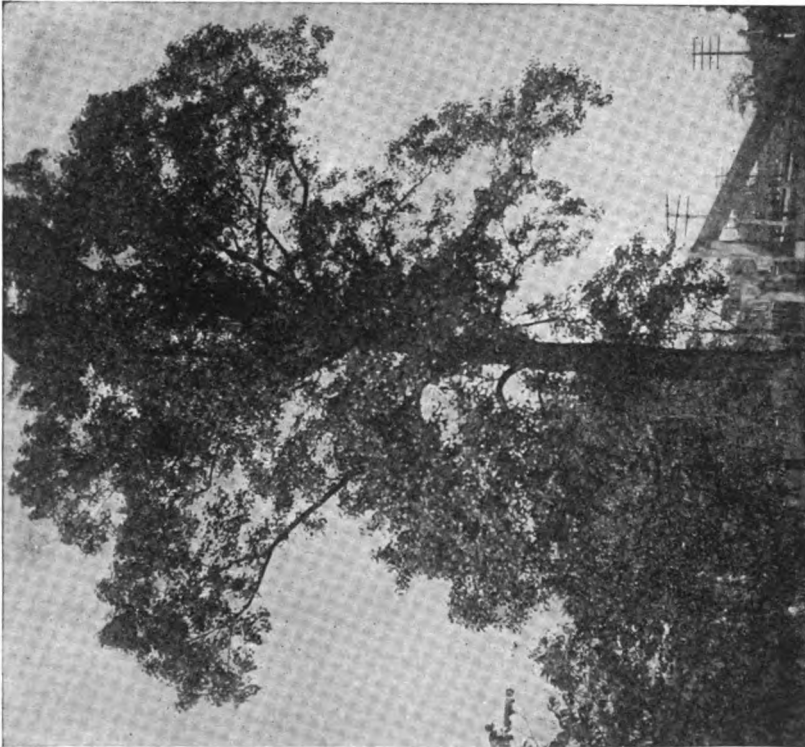
"Berries red,  
Have no dread!  
Berries white,  
Poisonous sight!  
Leaves three,  
Quickly flee."

One should be cautious, moreover, in going to the leeward of a fire in which the poison-shrubs are burning, and should never chew bits of wood without first examining them; the smoke from the burning, or the chewed-up splinter of bark may result seriously even for persons who are not usually affected.

## THE SHAD-BUSH

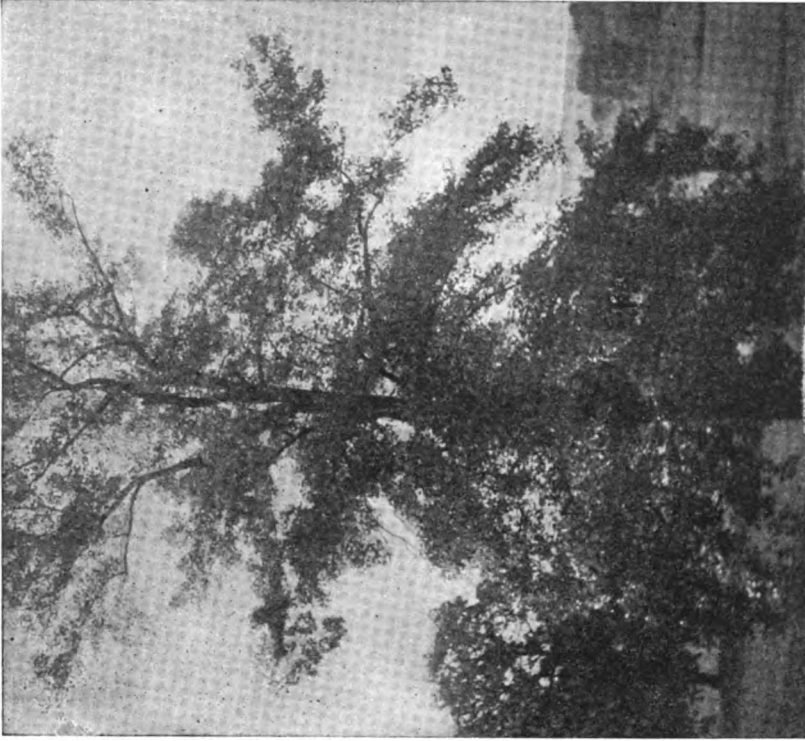
It is a relief to turn to the innocent little June-berry which adorns itself with slender-petalled white blooms before its cottony leaves have fairly left the bud, and while the shad are swimming up the rivers, — whence its homely name of shad-bush.

Service, or more commonly "sarvice" berry, it is also called. It frequently grows into a small slender tree, and, if the birds would only leave it alone, would ripen its sweetish fruits, very like plump rosehaws in appearance. But the mealy pulp appears to be so



**TULIP TREE**

One of the handiest of our flowering trees. It has a squarish, deeply-notched leaf of peculiar shape, tulip-like yellow flowers and a noticeably straight shaft.



**LIQUIDAMBAR**

A great tree easily known by its curious fruit, like spiked spheres, and its handsome star-shaped leaves, which change to brilliant reds and purples in autumn.

delicious to all birds, that one scarcely ever finds ripened fruit beneath the cherry-like foliage. It is said that Indians picked the fruits, but I cannot imagine where they found enough to make it worth while. The birds practically make it useless to improve the service-berry.

It is not from the attack of birds, but from those of little gnawing animals that great nut trees seek to protect the sweet, rich kernels of their fruit; and they are not altogether successful, we think, when we notice the number of shells bitten open and emptied by squirrels and chipmunks.

#### THE BUTTERNUT

Yet a butternut must present quite a problem to the eager teeth of even a red squirrel. For, when it falls, it is enveloped in a sticky husk, and when this disappears, it leaves a four-ribbed oblong nut two inches long, with a stony-hard shell, bearing thin, saw-edged ridges.

All summer, at first soft and green, the butternuts have been ripening in clusters at the top of the branches, tucked in at the bases of the great leaves broken up into many leaflets that are not a whit too big for the fine tree that bears them. Butternut brown was the colonial dye from this tree — some say from the husks of the nuts (which certainly stain the fingers) while others claim that the inner bark gave the tint. At any rate, the wood is pale brown, and is sometimes used for interior house-trimmings.

#### THE CHESTNUT

It is fitting that our little talk about the chestnut tree should come at the end of the story, for unless some clever scientist discovers a remedy for the disease that is killing them, our chestnut groves will soon be destroyed, just as the apple orchards are vanishing under the curse of the San José scale. The latter can be controlled by spraying, but the fungus disease of the chestnut, which girdles and soon kills even great trees, works under the bark. It will not be long before the noble trees, with their gray, deeply furrowed bark, and long-pointed, sharply-toothed leaves, will be only memories, as well as the sweet,

glossy nuts, hurled by Jack Frost out of the velvet-lined husks in which they have lain all summer protected against bird and beast by the fearful bristling armour of prickles on the outside of those spherical husks. What will the railroads do without their chestnut sleepers, riven out of the tough, brown, durable and easily split wood? or the carpenters, who have used it in finishing houses? or the farmers who have made fence-posts and a thousand and one things out of the chestnut poles? And how we shall miss its great round domes, lightening the colour of the forest in June with their masses of pale yellow tassels of bloom, that will turn no more into the red-brown nuts with the sweet kernels.

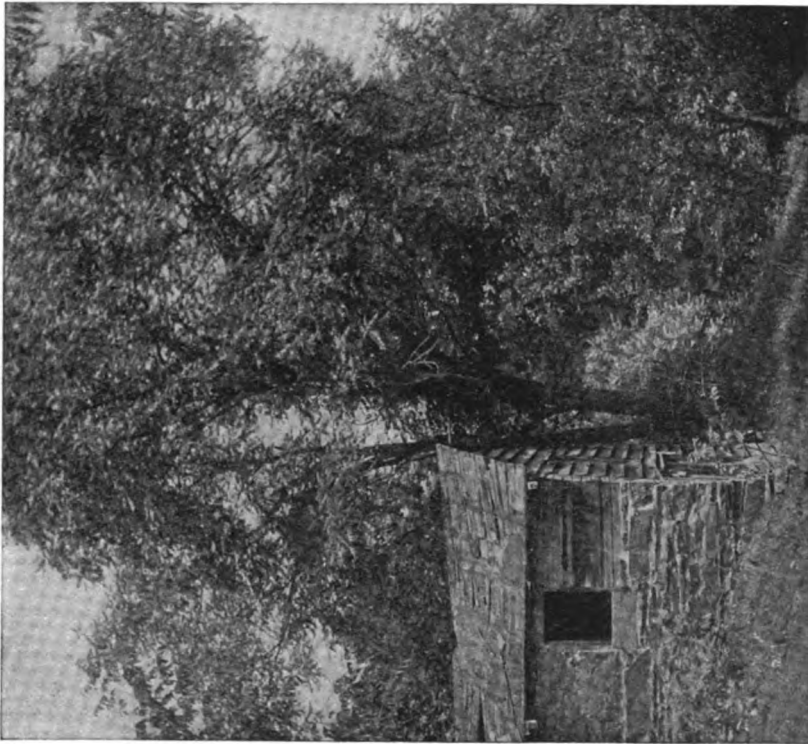
We are quite used to eating these sweet nuts, but we scarcely think of adding bark to our table dainties. School-children, however, delight in nibbling the smooth, thin, spicy bark of black birch-twigs; and they do not realise that in Sub-Arctic Russia the poor peasants depend upon birch-bark as a sort of salad in their meals.

The earliest settlers in New England found that certain Indians, called "tree-eaters," by wealthier folk, when they had devoured their scanty winter stores of food, ate the tender bark of various trees. Moreover, in the western states, where the great poplars line the water-courses, the Indians scrape off their sweet and sappy inner bark for a delicacy. "It is their ice-cream," said an educated red man. Farther west, the sugar- and other pines are similarly stripped by little scrapers carried for the purpose.

One of the oddest forms of bark-food, that much resembled oakum, or the fibrous coat of a cocoanut, was offered to explorers on the Pacific Coast, who found that they were eating dried hemlock-bark, soaked in salmon oil, which was, unfortunately, usually rancid.

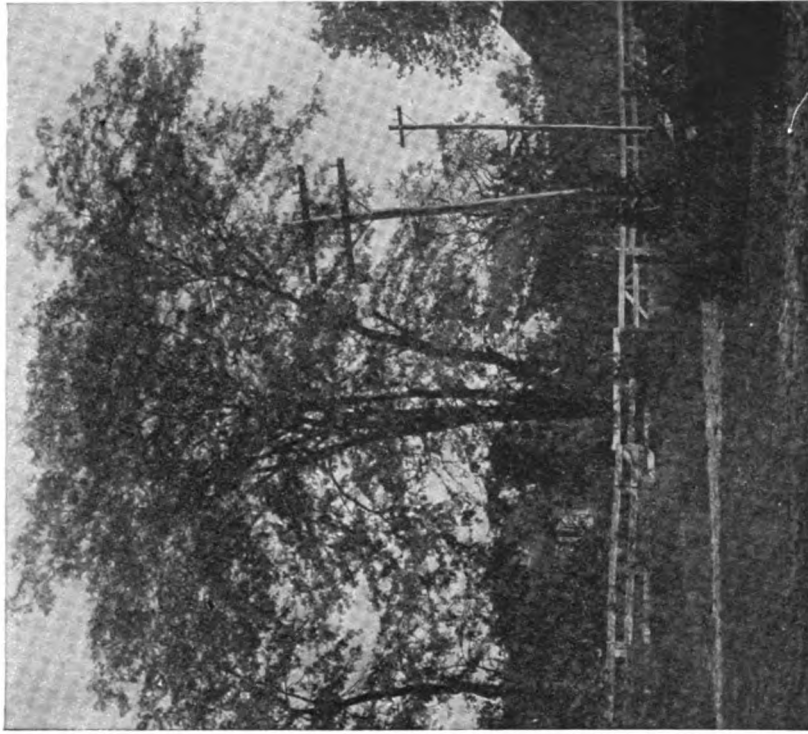
Besides its occasional use as food, bark is valuable in many other ways. That of the hemlock, the oak, and the birch is used in tanning leather. Mulberry- and cedar-bark was woven into clothing. Cork is the spongy bark of an oak, growing on Mediterranean shores.





#### BUTTERNUT TREE

A very close relative of the black walnut, which is sometimes called white walnut. In foliage and habit it somewhat resembles the former tree, but is smaller and not so valuable.



#### HONEY LOCUST

A tree which is often confused with the flowering locust. Its coarse-grained wood is sometimes used for fence posts. It has long, black pods filled with pulp which is first sweet, then acid.

## THE COMING OF SPRING



Photograph taken by Arthur V. Abbott



## DIGGING THE PANAMA CANAL

EVER since explorers found that only a few miles of land separated the Atlantic and Pacific Oceans between the two continents, men have spoken of joining these two oceans by digging a canal. It was evidently so expensive and so difficult that no real attempt was made until about thirty years ago, when a French company secured from the Republic of Colombia the right to dig a canal through the Isthmus of Panama. At the head of the company was Ferdinand de Lesseps, who had succeeded in separating Africa from Asia by means of the Suez Canal, and spurred on by his success in this great work, he felt sure that he could accomplish this task on the other side of the world.

It was found, however, that the two pieces of work could not be compared. The Suez Canal is only a great ditch through the sand or through shallow lakes. While the weather is hot the climate is not particularly unhealthful for Europeans and workmen could be secured from the neighbouring tribes.

In Panama tropical conditions prevailed. During the rainy season vegetation grew up almost in a night, drainage was difficult and it was found that many men engaged on the work died. Mountains had to be dug through. The attempt to get the inhabitants of the district to work was unsuccessful. Why should they work? The soil was so rich that a few hours' work in the course of a month would furnish abundant food, and therefore they could see no reason why they should work, hour after hour in the rain or the sun, carrying away soil, blasting the rock and doing the other hard tasks which are necessary to be done.

At first it had been announced that \$120,000,000 would be sufficient to do the work; then the larger sum of \$180,000,000 was announced, and finally it was seen that this latter sum would not begin to see the work com-

pleted. Though Mr. De Lesseps' plans were good and though much of the work done was well done, some bad men got control of the company, much money was stolen and the company was thrown into debt. Finally De Lesseps was arrested, though it seems that he himself had not been guilty of dishonesty. The French people would not put any more money into the Canal and so for several years the whole plant lay idle. The houses of the Canal workmen were hid in vines in the undergrowth which sprang up. It seemed that all traces of the French attempt were to be wiped out.

Meanwhile in this country there was a great interest in the Canal and this interest grew as our Western states developed. Some men wished to buy out the French company and continue the work across the Isthmus of Panama. Others preferred to cross the Isthmus of Nicaragua, further to the north. Here the distance between the Atlantic and Pacific was much wider, but it was expected to make a large lake and a river a part of the Canal.

Another marvellous project was to cross the Isthmus by means of a ship railway. An immense frame or cradle capable of receiving the largest ship was to be constructed. This was to be mounted upon many-wheeled trucks running upon several railway tracks. These tracks on each side of the Isthmus were to extend into the sea. The cradle would be pushed out into the water, the ship was to sail in and the powerful engines would then draw the trucks out upon the land and carry the ship over to the other side of the Isthmus, where it would be lowered into the sea.

Finally, after much discussion, the Panama route was chosen, the French Company was bought out for \$40,000,000 and the United States was ready to begin. Just then the Republic of Colombia seemed to intend to go back

Copyright, 1911, by M. Perry Mills.

upon the bargain it had made and to charge the United States a much higher price than had been agreed upon for the right to cut the Isthmus. The citizens of the Isthmus were unwilling to see so much money lost and therefore they suddenly declared themselves independent of Colombia in 1903, and created the Republic of Panama. An agreement was immediately made with the new republic. The United States agreed to pay \$10,000,000, and after ten years had passed to pay \$250,000 a year.

The building of a sea-level canal was at first mentioned, but soon, though less than half of the committee which had charge of the work reported in favour of a lock canal, it was decided to build the latter type, that is to say, a canal which is not level all the way across but one in which the boats are raised by means of locks as explained in another part of our book. The Republic of Panama gave to the United States for a hundred years a strip of land five miles wide on each side of the Canal. This is called the Canal Zone. Also the privilege of controlling the health conditions of the cities of Colon and Panama was granted, though the United States has nothing to do with the government of these cities outside of the health matters.

Now let us see what has been done. Beginning in Limon Bay on the Atlantic side near Colon, the Canal extends 500 feet wide and 41 feet deep to Gatun, about seven miles away. Here are the first locks, three of them. A great dam, which is more like a hill, is being thrown across the valley of the River Chagres. This hill is so thick and contains so many million loads of earth and stone that it is not believed that the force of the water can ever break it, though the river sometimes rises 25 feet in 24 hours. This dam makes a great lake of the surrounding country and through this lake the width of the channel is for a part of the time more than one thousand feet.

The most interesting part next to the building of the great dam is possibly Culebra Cut, where the Canal cuts directly through a mountain. We show you a picture of this and it will make

you realise how small men are. This work is done by means of steam shovels which are also shown you in the picture. These great machines run by engines scoop into the side of the hill, gathering up hundreds of pounds of dirt, soft rock and shattered stone. The man in charge with a little twist of the wrist turns the great scoop so that it drops its load into a car standing near. When the train is full the engine pulls it off to a section which it is desired to build up rather than to cut down.

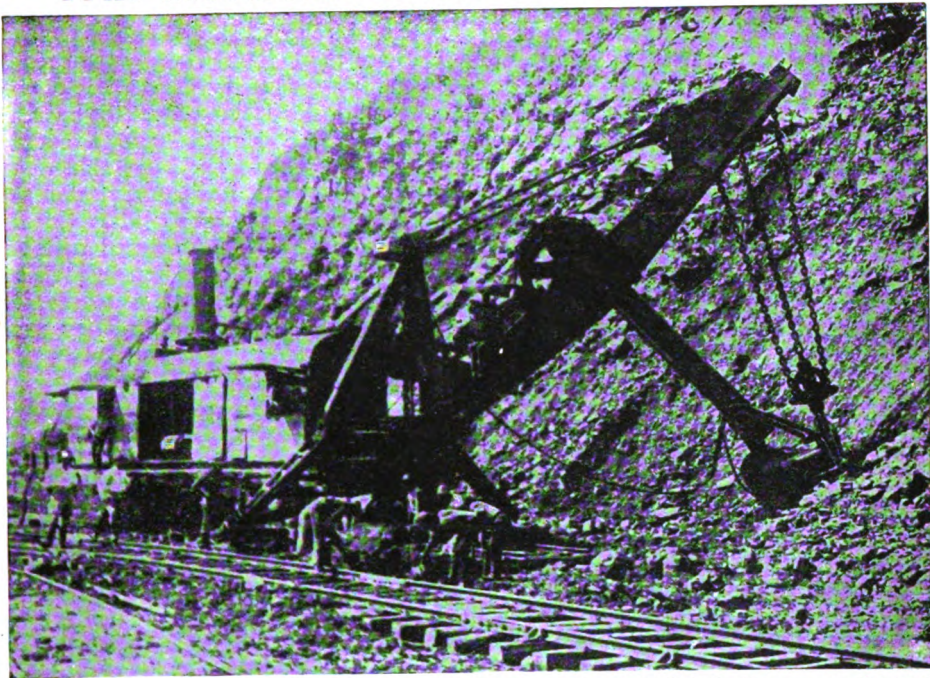
The steam shovels are of various sizes. The one called the "95-ton shovel" seems to do the best work. This carries as high as five cubic yards at a time. When a rock is too large to go inside the shovel it is blasted into smaller fragments. The trains which carry away the dirt and rock are very long as it is sometimes necessary to carry the material many miles. Some of it is used in filling in swamps, and much is used to extend the breakwater upon the Pacific side.

In 1855 a railroad was constructed across the Isthmus and this road is now owned by the Government. The change in the plan of the Canal would bring a large part of the tracks under water and therefore a new line has been laid out for it. Much of the material taken from the great cuts is used to make embankments for this road. Every important appliance is in use in the work. When enough material has been dumped in any one place, by a very ingenious contrivance the whole railroad is lifted up and moved several feet to the right or left as the case may be. Of course this work is slow and the track is not very smooth. There are dozens of these temporary railroad tracks along the Canal occupying one position to-day and an entirely different one next week.

Culebra is the most difficult and most uncertain part of the work, for just when the men who are digging think they have gone far enough the earth slides down from the sides and must be slowly and carefully taken away. These slides must come to an end sometime, but how soon no one can predict.

Though the actual work in digging the Canal is very wonderful, far surpassing

## THE MONSTER THAT EATS THE HILLS



Without the steam shovel such a work as the Canal could never be accomplished. Here you see the great scoop holding five cubic yards, gathering up earth and broken stone.



The man in charge of the steam shovel, by moving the lever, raises it, and the great scoop swings around and deposits its load in a dump car. When all the cars of the train are full the engine draws them to a place where it is desirable to fill in rather than to dig out.

Photographs copyright by Keystone View Co.



anything which has ever been accomplished before in the history of mankind, the work of the Government in making the Isthmus healthful and in taking care of its army of labourers is even more surprising. Years ago both Panama and Colon were subject to yellow fever which at times almost paralysed business. Since it has been discovered that yellow fever is always caused by the bite of a particular kind of mosquito the Government engineers have had a basis upon which to work. They have installed a complete system of sewerage

ful. Over two thousand buildings were constructed, including offices, hospitals, hotels, kitchens, shops and barracks. Many of the buildings left by the French company were repaired and made of use. It was decided, in order to be sure that the men should have a supply of well cooked and suitable food the Government must undertake the work. Good wages are paid to the labourers and they are furnished with excellent meals at low prices. Provision was also made for the men who occupied more responsible positions. They were

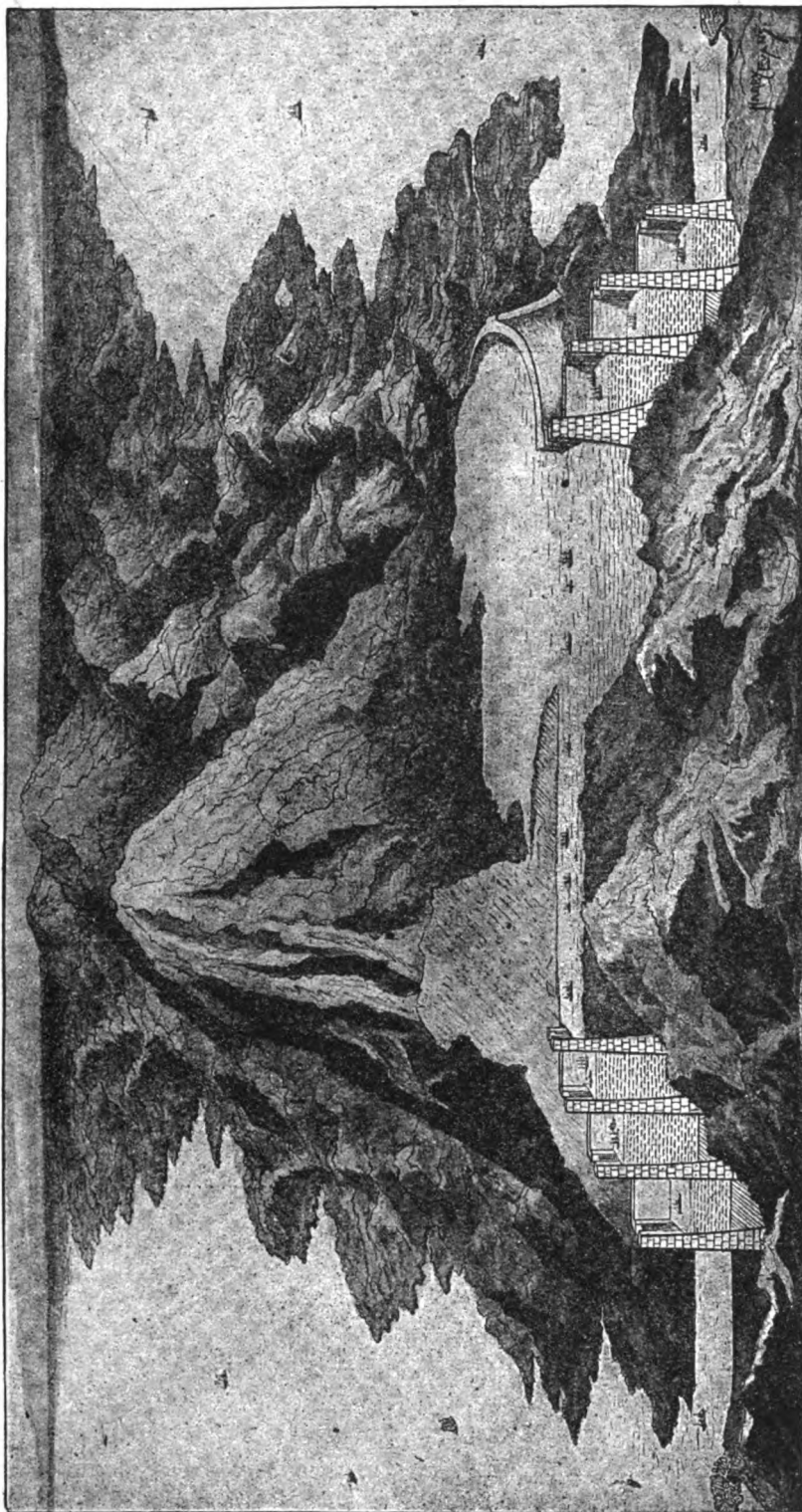


In the great Culebra Cut are dozens of temporary railroad tracks placed so that the steam shovels can reach the banks. When necessary to dig in a new place, this machine, known as a track-shifter, picks up the track, ties and all, and moves it to whichever side is desired.

in the two cities, have caused the streets to be paved and have prevented the collection of heaps of garbage and stagnant water in which mosquitoes might breed. They have kept the undergrowth cut down along the canal and last year spent \$43,000 for crude oil with which to spray the ditches, thus killing the young mosquitoes. As a result yellow fever has become almost unknown in the whole Isthmus. Before any actual work was done upon the Canal nearly two and a half years were spent in this work of making the region health-

encouraged to bring out their families. The single men live in barracks or cottages and board at the hotels under Government supervision. The married men are furnished with quarters and have the privilege of buying direct from the Commissary Department. This Commissary Department is a very important feature and controls several important manufacturing plants. It is in reality a great department store. It controls an ice plant which turns out about 90 tons of ice a day. It bakes 14,000 loaves of bread, makes 250

## THE WONDERFUL STEPS OF WATER UP WHICH GREAT SHIPS WILL CLIMB



Copyright by The Amalgamated Press, Ltd.

This striking picture gives us a vivid idea of how the new world will be cut in two by the Panama Canal, and how the biggest ships will climb up the hills and steam right through the Culebra mountain from one ocean to another, making, from point to point, in a few hours a voyage that formerly took many weeks. There are three great locks at each end of the canal, and these will work on exactly the same principle as ordinary canal locks, only they will be the most wonderful locks the world has ever known. Of course this picture is not drawn to scale. The artist has had to compress the canal in order to show us clearly its most important parts. When the great work is finished, the commercial routes will be shortened by thousands of miles.

gallons of ice cream, roasts a thousand pounds of coffee and is able to take care of 7,500 pieces of laundry a day. Refrigerator cars run from its cold storage warehouses to different parts of the Zone and every morning the supply train leaves the central point, depositing such goods as are wanted at the local commissary stations, where the employees, hotels, etc., can make their purchases. Excellent hospital accommodations are provided at Ancon and Colon. As a result of the vigilance which has been exercised by the sanitary department, health conditions are better than in many American cities.

In the messes arranged for the men the division is by the coin in which the men are paid. One set of accommodations is provided for those on the "gold roll" and another for those on the "silver roll." Generally Americans and Europeans are on the gold roll and the West Indians and the residents of the Zone are on the silver roll. The meals of those on the silver roll are charged for at the rate of thirty cents while those on the gold roll pay forty. In most of the mess halls for the gold-roll employees there are two dining-rooms, in one of which the employees may eat without their coats, as many of the operators and engineers are engaged in work which is dirty. In the Zone all the machinery is on a grand scale. The mixers of concrete for example are so large that a man seems a pigmy beside them. It is estimated that four and a half million barrels of cement will be used in the construction of the work. The concrete is mixed almost automatically. A grab bucket darts down into a pile of sand, fills itself, runs back along an overhead track and drops its load into the mixer. Meanwhile another goes for a load of stone. The cement has already been emptied from sacks or barrels. On the Pacific side the two principal locks by which our ship descends from its height are at Miraflores. Here the Canal drops fifty-five feet. It has already dropped thirty feet at another point. The work at Miraflores has progressed much more rapidly than anyone expected and it is estimated that this work will be finished seven months sooner than had been ex-

pected. The variation in the tide is greater on the Pacific coast than on the Atlantic.

It is estimated that the Canal will cost \$375,000,000 to finish. Such a sum staggers one. In fact, we cannot comprehend this amount of money. It is exceedingly doubtful if the Canal can ever pay a profit. Though the locks can be filled in eight minutes a considerable time is necessary to take a ship through and it is estimated that not more than fifty-eight ships can pass through in a single day of twenty-four hours, — for the Canal will be so brilliantly lighted that ships will pass by night as well as by day. It is probable that the tolls charged can never be large enough to pay a fair rate of interest.

But it was not for direct profit alone that the United States determined to build the Canal. Our ships are at a great disadvantage in trading with Asiatic countries, since our chief seaports are upon the eastern coast and in order to reach these eastern markets a ship must first sail across the Atlantic and through the Suez Canal or else go altogether around South America. It is hoped that the building of the Canal will help very much to develop the Mississippi Valley by allowing to its product a quicker way to market.

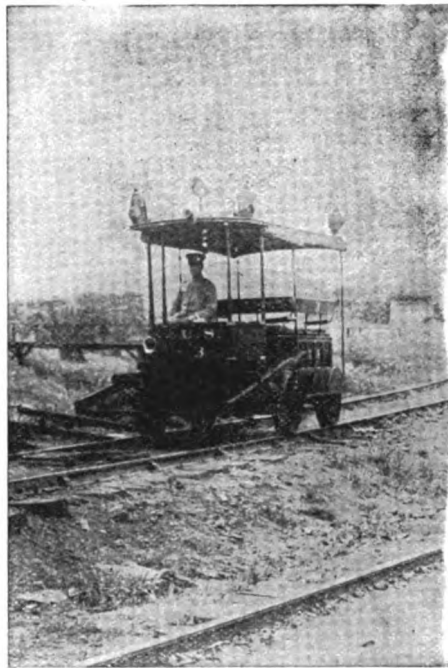
Then, too, the condition of affairs at the beginning of the Spanish-American War has not been forgotten. Then our fleet was divided, and your parents can tell you something of the wonderful voyage of the Oregon around Cape Horn and into the Atlantic Ocean. Without the Canal the United States must keep two fleets, one in the Atlantic and one in the Pacific Ocean. With the Canal ships can be easily transferred from one ocean to the other, and it is thought that the amount saved in naval expenses will easily pay the interest on the bonds which have been sold to build the Canal.

But whether all these expectations are realised or not, it must make us feel proud that our country is doing this great work. Few countries in the world are rich enough to undertake such a work and it is certain that no country could do better than our Government engineers are doing this stupendous task.

## SCENES ALONG THE ZONE



When the French Company became bankrupt in 1889 much of the machinery was left on the ground. Here we see hundreds of good locomotives overgrown by vines and eaten up by rust.



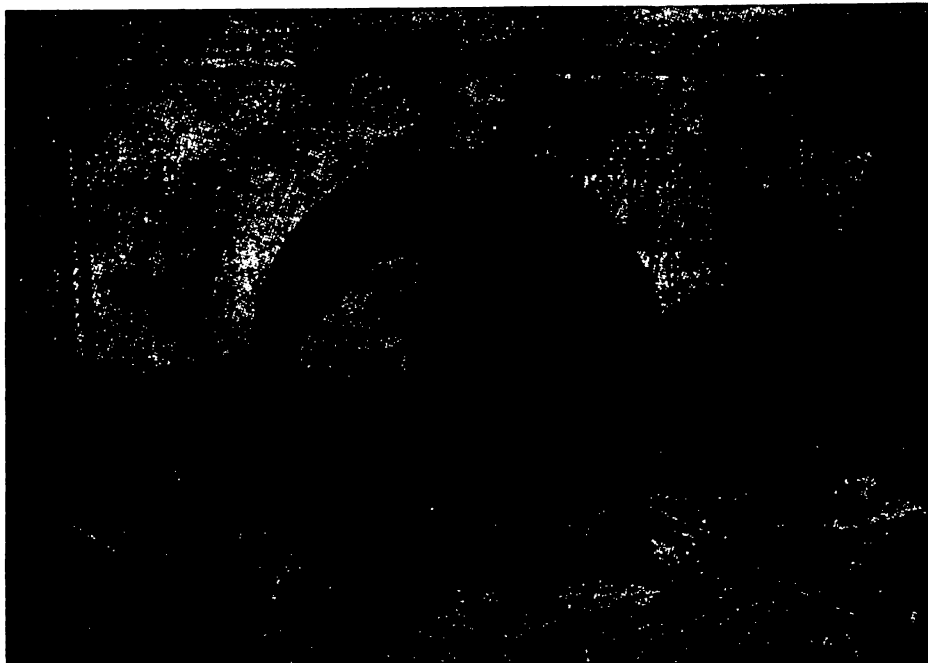
The engineers and supervisors move from one part of the work to another in the railroad automobile, a picture of which you see here. It is like any other automobile, except that it runs on rails.



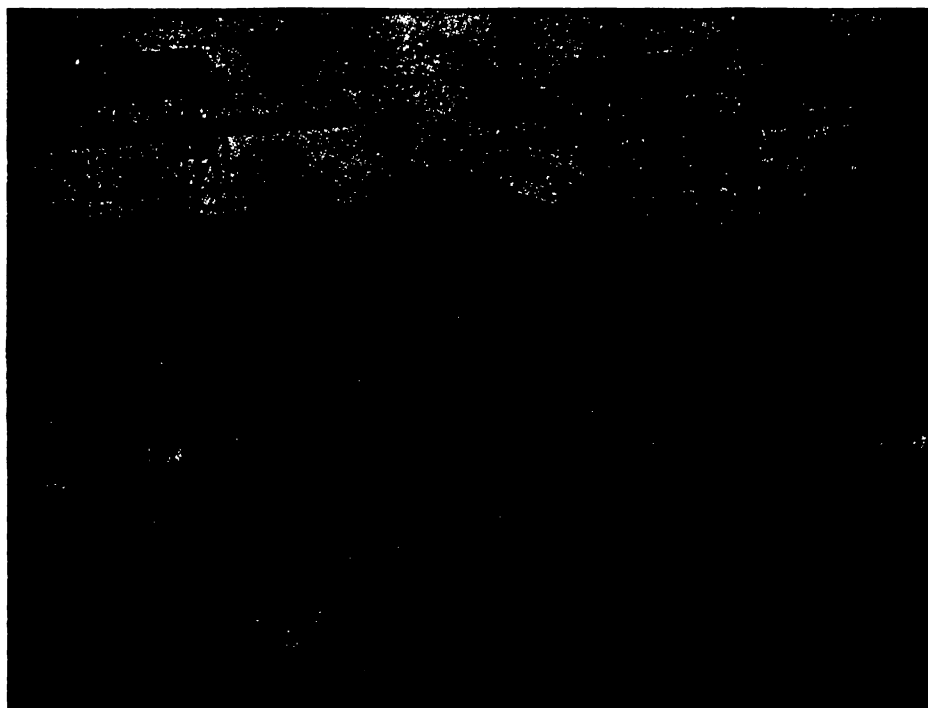
Every provision has been made by the government for the health and comfort of those working on the Canal. Here is a picture of the attractive grounds of the Hospital at Ancon.

Photographs copyright by Keystone View Co.

## THE BEGINNING OF THE GREAT LOCKS



Among the most wonderful features of the canal, which in parts is 85 feet above sea-level, are the enormous locks, enabling great ships to climb to the high level. The lock walls are built round great circular iron shapes like this.



Here we see the mighty walls growing up, and the towering cranes by which the masonry is laid in position. By building round circular iron frames a tunnel passage is left in the wall, through which the surplus water will flow.





## DOES SYMPATHY HELP US?

**S**YMPATHY does help us, and it *is* help just as truly as money would be, and it often helps where money would be of no use at all. This we see every day when people are suffering, not from lack of money, but from illness or pain. In such cases sympathy is worth all the world to them.

We are so made that sympathy, besides comforting the mind, may even relieve the pain. We all know how the sympathy of someone we love, showing itself by quietly stroking the forehead, may really relieve a headache. The interesting point about this power of sympathy is that it must come from a person with whom we are "in sympathy," as people say.

If it comes from the wrong person it will do more harm than good. Very much of the success and usefulness of the most successful doctors and nurses comes not from their skill, but from their power of sympathising with their patients.

### HOW DO SPECTACLES HELP US TO SEE?

Of course we understand that the spectacles do no seeing themselves, and there must be many kinds of difficulty in seeing for which no spectacles can do anything. The brain may be injured in its vision quarter, the nerve of the eye may be pressed upon or torn, the curtain at the back of the eye may be starved of blood or poisoned, the lens of the eye may be opaque instead of transparent, and so on. In such cases no spectacles are of any use. All they can do is simply to

bend the rays of light passing through, in such a way that the rays fall rightly upon the curtain at the back of the eye.

It is often expected that spectacles will make people keen-sighted, but that is quite a mistake. One man with eyes quite healthy and sound, but perhaps needing spectacles, may get a pair which suit him perfectly; but he may still be quite unable to make out things at a distance which another man may see quite clearly, with or without spectacles.

Glasses may either bend rays of light inward toward each other, so that they come to a point sooner than they would otherwise have done, or they may bend the rays rather away from each other—or, at least, make them come to a point much later than they would otherwise have done. The rays are all wanted to come together at the retina; so, if the eye is too short, converging lenses, shaped like a burning-glass, are wanted, while concave, or hollowed-out, lenses are needed if the eyeball is too long.

Then, if the eyeball is so shaped that it does not treat rays the same way from side to side as up and down, we require a sort of barrel or cylinder-shaped lens, curved much more in one direction than in the other. When lenses are put together, one in front of the other, we have microscopes and telescopes. But, even with the largest telescope, differences in natural keenness of eye remain, and one man will discover comet after comet where another will be unable to see anything.

**CAN A MACHINE BE MADE TO COUNT?**

Yes, calculating machines "count." They have no voice with which to say aloud "one, two, three, four, five," but they count for us when we press certain levers. Figures are made on cylinders or discs, which are driven by various toothed wheels. These discs are so connected that, when one disc is caused to turn ten spaces, the disc next to it turns one space. This serves for a sum in adding up. For subtraction, the discs revolve in the opposite direction. But that is simple work which any child can do. The calculating machine also multiplies and divides, extracts the square root, and works out the most difficult sums. Men may make mistakes; but these machines, provided that they are in order, cannot make mistakes. They are so accurate that they are trusted more than men. All our most important astronomical and mathematical tables are worked out by these wonderful machines which man makes to be more accurate than he himself can ever hope to be. The machines are used in all the big insurance and large business offices. Early in the nineteenth century, Charles Babbage, a great mathematician, gave thirty years of his life to making a calculating machine, but it was not a success. The best machine in use to-day not only adds, subtracts, and divides, and shows the correct result, but actually prints the whole sum.

**DO WE ALWAYS SEE EVERYTHING THE MOMENT IT HAPPENS?**

On the contrary, we never see anything the moment it happens. Seeing is a very quick process, but yet it takes time. In the first place, when we see anything happen, the light from the objects we are looking at has to travel through space to reach our eyes. Now, light travels about 186,000 miles in a second, so when we are looking at something near at hand, or at anything on the earth, the time spent in this way is such a very tiny part of a second that we cannot imagine it.

But the stars are very distant, and lately astronomers saw something in the sky, certainly not the moment it happened, for they reckon that it must really have happened when James I. was on the throne of England. But this is not all. When the light reaches the eye, and passes through the front of the eye and reaches the nerve-cells

in the retina, or curtain at the back of the eye, something which we can only call a nerve-current travels along the nerve of the eye to the brain, and through the substance of the brain to its very backmost part, where we really see things.

A nerve-current travels at about the rate of an express train—say, fifty to sixty miles an hour; so we may reckon how long it takes to travel some six inches or so, from the eye to the seeing centre in the brain. Lastly, the cells in the brain do their share, which takes more time than all the rest put together, and when that is done—we see.

**WHY DO WE NOT GROW BIG ALL AT ONCE?**

It is not in the nature of any living creature to be born full-grown. There is always a period of what is called development. In the case of the very humblest animals and plants, such as microbes, this is so short as to be scarcely worth mentioning; whereas, as life ascends, the period of development gets longer and longer.

All development is itself a miracle, and no less than if it really occurred all at once. We are beginning now to understand the reasons why it takes such a particularly long time for human beings to grow big. The fact which most distinguishes our growing is the growth of the brain. This comes first, so that the development of the brain is always ahead of the rest of the body; and it has to be so for the very good reason that the growth and health of the rest of the body so largely depend upon the brain, which therefore has to lead the way. That is why a new-born baby's head is so huge compared with the rest of its body. But though the brain is the first to begin and always leads the way, it is very interesting to know that the brain is not the first to stop.

On the contrary, when all the bones have stopped growing, so that we shall never be any taller, and when the rest of the body is fully developed, say, at twenty-seven or twenty-eight, the brain is still developing, though it may not be actually growing bigger in size; and it is not until many years later that a healthy man, who leads a sensible life, reaches the height of his mental powers. Most of the great works of thought that have made the history of the deepest kinds of knowledge have been written by men fifty years old or more.

**WHERE IS THE WHITE MAN'S GRAVE?**

This is the name which was very rightly given in the old days to part of the coast of West Africa, when white men first went there for the riches of the district and found that those who stayed for only a short time nearly all died or came to death's door. The great cause of this was the fever called malaria. In the course of long ages, the chemistry of the bodies of the natives of a malarial district, such as the White Man's Grave, has become changed, so that they can resist the poison of malaria. The poison enters practically every one of them when they are tiny children, but it does them comparatively little harm. The white man, however, is a very easy prey, and is struck down almost at once.

**WHAT CAUSES MALARIA?**

The name malaria means "bad air," and people thought that the poison must be in the air which was breathed in these places. But within the last fifteen years it has been found that malaria is due to a tiny living creature which is put into a person's blood by a certain kind of mosquito when it bites him. And now, in all parts of the world where the people have enough sense, this mosquito is being attacked, and people are taking care not to be bitten even by the mosquitoes that remain. Already the West African coast no longer deserves its old name of the White Man's Grave, and those who know tell us that before very long it may even become a favourite health resort for the white man!

**WHY DOES AN APPLE TURN BROWN IF WE BITE IT AND PUT IT ASIDE?**

This is one of many similar instances. We notice that the same sort of thing happens to some kinds of meat. When we cut a slice, the surface left is at first pale, but before very long it turns quite a dark brown. Now, we know that when various metals are left exposed to the air, their surfaces change colour. This is true, for instance, of iron; and we say that the iron rusts. The easiest way to understand the change in an apple is to say that it rusts. That, I believe, is more than a mere comparison. The change in colour is certainly due to a true oxidation; something in the apple combines with the oxygen in the air, and the change of colour is produced. Now, it is quite probable that it is the iron in the apple which is responsible for this quick oxidation, and for the change of colour which is

produced by it. The colour of the apple after the surface has been oxidised quite suggests the colour of oxidised iron, and it is the case that probably all the colours of all kinds in all living things are due to the iron they contain. Chemists know how rich and various are the colours of the compounds of iron—brilliant red, the most intense blue, vivid green, and so on, and these colours suggest to us the cause of the colours of life in all its forms.

**WHY DO FLOWERS DROOP IN A HEATED ROOM?**

The shape and the balance of a flower very largely depend upon the water it contains. This is no doubt due in some degree to the mere presence of the water in itself. In a heated room the air, because it is heated, can hold a good deal of moisture. This means that the water rapidly leaves the flower through every part of its surface, and so the flower is dried up, withers, and droops. This will happen much less rapidly, of course, if the stalk of the flower is placed in water which it can suck up to some extent to make up for its rapid loss of water to the air.

But there can be little doubt that more than the question of water itself is concerned. All life is lived in water, and the very life of the flower is interfered with directly the supply of water falls short. Yet, again, a flower is meant to live in the open air. Such a flower as a rose, or any other flower that grows in the open air in this country, has its fibres and tissues so put together that they shall be stiff enough at the ordinary temperature of the open air. But the fibres which were stiff enough at such a temperature, may not be stiff enough when the flower is heated, for just the same kind of reason as that which makes sealing-wax soften when it is heated.

**WHAT IS THE ADVANTAGE OF THE METRIC SYSTEM?**

The advantages of the metric system are almost endless. They are so great that the metric system is used all over the world by men of science of all kinds; it is used in business in most parts of the world now, and every year it is being more generally used. All the measures in it are tens or tenths of the measures next to them. Instead of having 12 inches 1 foot, 3 feet 1 yard, 1,760 yards one mile, and so on, we have all the measures in the metric system going by tens.

This means that every kind of reckoning is made very simple because, in order to reduce one measure to another, it is merely necessary to move a decimal point along in one direction or the other. The huge labour of multiplying and dividing, made necessary by other measures, is all done away with.

Still more important is it that under the metric system all the different kinds of measures are related. In other systems, measures of length and of weight and of bulk, for instance, are all quite different; no measure of one of these kinds has anything particular to do with any other, and so there is more confusion than ever.

But in the metric system all these different kinds of measures are related, so that it is the easiest thing in the world to reckon the relation between bulk and weight, length and capacity. Then, again, the metric system agrees with the best method of measuring heat, which also goes by decimals. The time will have to come, and that before very long, when the metric system will be used all over the world, and will also be applied to coinage and money in general, to the great advantage of children who have to learn arithmetic.

**WHY DO WE PRESS HARD ON DOWN STROKES WHEN WRITING?**

One reason for this is the way in which pens are made. Whether we use a quill or a metal pen, it is so made that it runs more freely, if pressed, coming downward than it does going upward, for when it goes upward, if pressed, the point is apt to stick in the paper. That, however, is certainly not the whole reason. Even when we use a pen that has a turned-up point, or when we use a pencil, we find that we tend rather to press coming downward. This remains true even if we make the experiment of writing with the top end of the pencil turned away from us, instead of turned toward us. There is no doubt that the real reason is to be found in the way in which our hands are made.

The muscles that bend our fingers are vastly stronger than those that unbend them. Bending them is, of course, the important thing that requires strength, because it is by bending the fingers that we hold and grasp. The muscles that unbend are, comparatively, very feeble, just as the muscles that open the mouth are feeble compared with those that close it. So we naturally use more force on the strokes we make with the closing than with the unclosing muscles.

**IS A LIGHTED CANDLE IN FRONT OF A MIRROR EQUAL TO TWO CANDLES?**

There is no doubt that when we put a candle in front of a looking-glass we seem to see two candles, and there is also no doubt that both from the real candle and from the reflected candle real light comes. If we have two glasses opposite each other, or if we have a light in a room with a number of mirrors, it seems as if we could multiply the light almost to any extent.

This has puzzled many people, for something tells us that we cannot get something out of nothing, and yet it looks in this case as if from one candle we were really somehow getting the light of two candles, or of many more. But what really happens is that we are getting proper value for the light of one candle.

The difference is tremendous if we take a candle and put it into a room with black walls, and then take the same candle and put it into a room the walls of which are lined with mirrors. In one case a great proportion of the light is absorbed, or sucked up, by the walls; in the other practically the whole of it is thrown back, and sooner or later reaches our eyes.

If people understood this better, they would realise what good economy it is to have their rooms covered with some surface that is very light in colour, and at the same time can be washed. It is good economy because far less light is needed to light such a room, the walls of which throw back nearly all the light in the room instead of sucking it up.

**WHY DOES A BUMP COME INSTEAD OF A DENT WHEN WE KNOCK OUR HEADS?**

It is quite possible to make a dent in the skull, or in a bone, just as in a table, but the blow would have to be hard, and would have to be made by something with a sharp edge, and even then the dent would not last long, but would soon be filled up, and much more than filled up, for a bump would be formed. The reasons why this bump is formed are very interesting.

When we have knocked our head, we have done a certain amount of damage at the place, and what happens there is what happens at any part of the body that has been damaged. The same is true whether the damage is due to a blow, or to a cut, or to a sting, or to the presence of microbes.

Everything that makes the bump is due to the body's effort to repair the damage; and so we are to look on the

bump as natural "doctoring," which is what it really is. The blood-vessels in the affected part enlarge, so that a quantity of blood goes there. Certain of the fluids of the blood soak through the walls of the blood-vessels, while numbers of white blood-cells pass through the walls also, and the swelling is due to the extra amount of fluid and to this vast congregation of cells that assemble in the place.

They are all there for a purpose ; they bring materials from which new things can be made to replace and repair anything that has been damaged or broken. If microbes are there, the fluids include substances which are poisonous to microbes, and the white cells eat the microbes up, and the part is made well again.

#### WHAT MAKES A HEADACHE?

A whole book could be written about headache, for it has so many causes. *The commonest of all is decayed teeth* ; but not even every doctor knows this.

The nerve that supplies the forehead and the front part of the scalp is the same as the nerve that sends branches to the jaws and teeth ; and when one part of it is disturbed, the other is apt to give us trouble too. So when any of us have constant headaches we must be sure to attend to any decayed teeth that we may have.

Another very common cause of headache is strain of the eyes in reading. This does not happen to those few and fortunate people whose eyes are of exactly the right shape and size, nor does it happen to short-sighted people ; but it constantly happens to those whose eyes are what we call long-sighted. They can see clearly at long distances, but for sight at short distances, as in reading and writing, they need to strain the eye in order to see the letters clearly, and this strain almost always gives rise to headache. The remedy is to use glasses that do the excessive work imposed upon the muscles inside the eye, and so relieve the strain and the consequent headache.

#### ARE HEADACHE POWDERS GOOD THINGS?

Everyone should know that the answer to this is, No—a thousand times, No. There is no headache powder anywhere that does anything to remove the cause of any headache. Headache powders only dull the brain so that we cannot feel the pain, and so very often persuade us to give up attending to ourselves, as we should do if the pain were still there. The powder

does nothing for the decayed teeth, or the strained eyes, or the overloaded stomach, that may be the real cause of the trouble.

These powders are all poisons, and people have often been killed by them. It is very wrong that men should be able to sell these things. People get into such a condition that they cannot do without them, and they gradually injure their brains and their minds, and do harm much greater than that which they seem to relieve in curing the headache.

#### WHAT MAKES A SICK-HEADACHE?

In the answer to the previous questions, we have read about three of the many causes of headache ; but this question is about a quite special kind of headache that has nothing to do with the teeth or eyes, and makes us much more miserable than an ordinary headache does. The pain may not be so great, but we are more unhappy, because we feel bad *all over*, and not only in the head. When we feel bad *all over*, the reason is almost always to be found somewhere inside the trunk of the body, and, nine times out of ten, in the stomach or its neighbourhood.

In other words, this is a kind of headache that suggests to the doctor, not teeth or eyes, but indigestion. People who never have indigestion never have these horrible sick-headaches. The best way to avoid them is to be careful and sensible about what we eat ; and the best way to cure them is to believe that Nature is wise in making an appetite disappear for a little. If we stop eating, and so give the stomach time to recover, and if we take some simple salts, or something of the kind, to clear away what is poisoning the blood and the brain, we shall soon be well.

#### WHERE DOES THE WOOL GO WHEN WE GET HOLES IN OUR STOCKINGS?

This question really and rightly assumes the answer to another question : Does the wool go to nowhere ? The answer to that question is No, for we know that it is impossible for anything to go nowhere.

Now, we can find out what happens to the wool by asking how this hole in the stocking is made. Holes do not come in stockings as long as they lie in drawers unused. It is when and where a stocking is rubbed that the holes come. After a lot of walking that wears a hole in a stocking, we could find traces of wool on the skin and inside the boot if we were to look with a microscope.



**WHAT WERE THE "HUNGRY FORTIES"?**

In the early forties of the nineteenth century, that is, from 1840 onward, very shortly after Queen Victoria came to the throne, bread was very dear. Now, bread has the virtue, none too common in this world, of combining great goodness with great cheapness, and therefore it has always been the principal food—the staple food, as we call it—of the poor wherever it has been obtainable. This was so, for instance, in great empires of the past, such as Egypt and Rome, and it is true of England. In the years round about 1840 bread cost, indeed, often twice as much as it does to-day, and the poor suffered terribly from hunger. A famous little book dealt with the subject of these days, and the author gave it the striking name of "The Hungry Forties."

**WHY IS BREAD CALLED "THE STAFF OF LIFE"?**

This is a very old name for bread, and, unlike many such old names, it is a very good one. Spirits used long ago to be called the "water of life," or, in Latin, *aqua vite*, but everyone knows now, or should know, that if they are to have any name of the kind, it should be *aqua mortis*, water of death. The old name, however, was hastily given to spirits by those who first found how to distil alcohol, and who naturally wanted to make the most of their discovery.

The belief that bread is a very good food, which is what men mean when they call it "the staff of life," is very old indeed. It must doubtless date back to the remote ages when men first grew corn for the purpose of making bread, and our reading in the Old Testament about the famine of corn in Egypt in the time of Joseph will give us some idea of the high honour in which corn was held a very long time ago.

**WHY IS BREAD SUCH A VALUABLE FOOD?**

It is only in the last few years that men have learnt how to study all kinds of food, and find out exactly how good they are, and in what way they are good, for the human body. This has been done, many times over and in many different ways, for thousands of foods and drugs, and certain very important facts have already been firmly established. We are still in much doubt as to the exact value of meat and of many other foods; but everyone who has any right to an opinion is agreed as to the value of bread. Milk is the staff of life in our

earliest years, and nothing else can replace it. But, though no other one food is as all-important in later years as milk is at first, bread is superior to everything else in its food value, and its cheapness and its freedom from anything that injures the body. Therefore, it cannot be too cheap.

**WHY HAVE SOME PEOPLE MORE BEAUTIFUL VOICES THAN OTHERS?**

If anyone has something the matter with the little cords in his throat that make his voice, it will be harsh or husky. A drunkard has usually injured his vocal cords, and so his voice is usually husky. But if people's vocal cords are quite well they are very like each other; and the difference between beautiful voices and ordinary voices has *nothing at all to do* with the vocal cords. The vocal cords of the most beautiful singer, if we could hear the sound they make by themselves, away from the rest of the throat, would disappoint us very much. The sound made by the vocal cords is always harsh and ugly. The beautiful singer is one who, firstly, has his throat and nose and mouth of exactly such shapes that they change the sound made by his cords into a pleasant sound. Secondly, he is a person who has learnt how to move the muscles of his throat and tongue and cheeks so as to make the sound as beautiful as possible. No one can make uglier sounds than a good singer, if he really wants to, for he is so clever in controlling these muscles.

**WHY DO SOME PEOPLE SPEAK MUSICALLY AND OTHERS HARSHLY?**

It is thought that the chief difference between people who speak in a beautiful voice and people who speak in an ugly voice is a difference not in the vocal cords, or yet in the throat, nor even in skill in using the muscles used in speech or singing; but it is a difference in the *brain*. People who have delicate ears—which means people whose brains, in the part which hears, are beautifully and finely made—will produce the kind of sound their brain likes, at any rate so far as they can; and almost anyone can speak, or even sing a few soft notes, in beautiful tones, *if they try*. But if our brain is coarsely made, and does not know or care about the difference between beautiful tones and ugly ones, then we shall just make the sounds that carry farthest, or take the least trouble to make, however ugly they are.

# The Child's Book of SCHOOL LESSONS



## READING CLUB

### THE MEANING OF COMMON ABBREVIATIONS

IN our reading we often see contractions, or initial letters, which we know stand for something. We may not know what they stand for, and, consequently, miss their meaning. On this and the following pages are given the contractions that we come across most frequently in our reading.

CONTINUED FROM 5536

**A1.** The principal use of this expression is for ships. At Lloyd's a ship that is classed as **A1** is a ship that is almost new or is as good as new. The **A** refers to the quality of the hull, and the **1** to the anchors, cables, and stores. The expression has now come to be used for anything that is very good. If we say that we feel **A1**, we mean that we feel in the very best of health.

**A.B.** Able-bodied seaman—a sailor who is no longer an apprentice, and is not an officer.

**A.B.** Bachelor of Arts.

**A.D.** In the Year of Our Lord. Taken from the Latin words *Anno Domini*. Our system of numbering the years is the *Anno Domini* system, and 1910 **A.D.** means the year 1910, reckoning the year of Christ's birth as 1.

**Ad.** or **Advt.** Advertisement.

**A.D.C.** Aide-de-camp, an army officer who carries orders to and from a general on the field of battle.

**Æ.** or **æt.** Aged, from the Latin word *ætatis*, meaning of the age. Charles Jones, **æt.** ten years, means Charles Jones, ten years of age.

**A.H.** The Mohammedans reckon their years from the *Hegira*, or the flight of Mohammed from Mecca to

Medina, in 622 **A.D.** The letters stand for *Anno Hegira*. Latin word—*anno*, meaning "in the year," and the Arabic word for "flight." When the Mohammedans speak of the year 1287 **A.H.**, they mean the same year as we do when we speak of 1909 **A.D.**

**Ala.** Alabama, one of the states of U.S.A.

**Ald.** Alderman.

**A.M.** Before noon. The letters represent the Latin words *ante meridiem*.

**A.M.** In the year of the world. The letters represent the Latin words *anno mundi*. The Jews reckon the years from the time the world was supposed to have been created, which was 3760 **B.C.** The Jewish year 5669 **A.M.** is the same as 1909 **A.D.**, but the Jewish year begins on September 26 instead of on the following January 1.

**A.M.** Master of Arts, from the Latin words *artium magister*. See **M.A.**

**Anon.** Anonymous.

**A.O.F.** Ancient Order of Foresters.

**App.** Appendix.

**A.R.A.** Associate of the Royal Academy.

**Ariz.** Arizona, one of the states of U.S.A.

**Ark.** Arkansas, one of the states of U.S.A.

**A.R.S.A.** Associate of the Royal Scottish Academy or Associate of the Royal Society of Arts.

**A.R.S.L.** Associate of the Royal Society of Literature.

**A.R.S.S.** Fellow of the Royal Society of Antiquaries. The letters stand for the Latin words *Antiquariorum Regiæ Societatis Socius*.

**A.V.** Authorised version of the Bible.

**B.A.** Bachelor of Arts. The letters stand for the Latin words *Baccalaureus Artium*

**B.C.** Before Christ. The years before Christ are reckoned backwards, so that the year 1 **B.C.** was one year before the birth of Christ, and the year 200 **B.C.** was 200 years before the birth of Christ.

**B.C.L.** Bachelor of Civil Law.

**B.D.** Bachelor of Divinity.

**B.L.** Bachelor of Law.

**b.l.** Bill of Lading.

**B.M.** Bachelor of Medicine. The letters are also used to mean British Museum.

**B. Mus.** Bachelor of Music.

**B.Sc.** Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus*.

**Bt.** or **Bart.** Baronet.

**bu.** Bushel.

**bx.** box.

**C.** The Roman numeral for 100, from the Latin *centum*, a hundred.

- C. Centigrade. The markings on the French or decimal thermometer. It is so called from the Latin *centum*, a hundred, and *gradus*, a step, because from freezing to boiling point is divided into 100 degrees. The American system of thermometer marking is the Fahrenheit, which is usually written F. or Fahr. It is so called after Fahrenheit, the scientist who invented it.
- C. Centime. A French coin, five of which are about equal to one cent.
- ca. About. Latin *circa*.
- Cal. California, one of the states of U.S.A.
- Cap. Chapter, from the Latin *caput*, the head.
- C.B. Companion of the Order of the Bath.
- C.B. Confined to barracks.
- C.B. Cape Breton, a part of Nova Scotia in Canada.
- C.C.N.Y. College of the City of New York.
- C.D.S.O. Companion of the Distinguished Service Order.
- c.d.v. Carte-de-visite.
- C.E. Civil Engineer, Christian Endeavour, or Children's Encyclopædia.
- Cf. A contraction of "confer" and used in the sense of *compare*. In bookbinding cf. means calf.
- C.F.I. A commercial expression meaning cost, freight, and insurance.
- C.G. Captain-general, commissary-general, consul-general, coastguard, or captain of the guard.
- Ch. Chapter.
- Chic. Chicago.
- C.J. Chief Justice.
- C.I.E. Companion of the Order of the Indian Empire.
- C.M. Master of Surgery. The letters stand for the Latin words *Chirurgia Magister*.
- Cm. Centimetre, the French measurement.
- C.M.G. Companion of the Order of St. Michael and St. George.
- C.O. Commanding Officer.
- C/o. Care of.
- c.o.d. Cash on delivery.
- Colo. Colorado, one of the states of U.S.A.
- Conn. Connecticut, one of the states of U.S.A.
- C.O.S. Charity Organisation Society.
- C.P. Court of Probate.
- Cr. Credit or creditor.
- C.S. Chemical Society.
- C.S. Civil Service.
- C.S.A. Confederate States of America.
- C.S.N. Confederate States Navy.
- C., or ct. Cent.
- C.V.O. Commander of the Royal Victorian Order.
- C.W.O. Cash with order.
- cwt. Hundredweight, from c. for *centum*, a hundred, and wt. for weight.
- d. Penny or pence. 2d. means two pence, and rd. means one penny. The d. is for the Latin word *denarius*.
- D.C. Repeat from the beginning. A contraction used in music, and standing for the Italian words *Da capo*. Also district of Columbia, in which is Washington, the capital of U.S.A.
- D.C.L. Doctor of Civil Law.
- D.D. Doctor of Divinity. The letters stand for the Latin words *Divinitatis Doctor*.
- Del. Delaware, one of the states of U.S.A.
- D.G. By the grace of God. The letters stand for the Latin words *Dei gratia*.
- D.L. Deputy Lieutenant.
- D.Lit. Doctor of Literature.
- D.L.O. Dead Letter Office.
- Dr. Doctor or debtor.
- dr. Dram.
- D.Sc. Doctor of Science. The letters stand for the Latin words *Doctor Scientia*.
- D.S.O. Distinguished Service Order.
- D.V. The letters stand for the two Latin words *Deo Vo. ente*, meaning God willing.
- dwt. Pennyweight. d. stands for the Latin word *denarius*, and wt. is a contraction for weight.
- E. East.
- E. & O.E. Errors and omissions excepted.
- E.C. East Central, a London postal district.
- Ed. Editor, or sometimes edition.
- e.g. For example. The letters stand for two Latin words *exempli gratia*.
- E.N.E. East-north-east—the point of the compass midway between the east and the north-east.
- Eng. Engineer; Engineering; England; English.
- E.R.I. Edward, King and Emperor, standing for the Latin words *Eduardus, Rex et Imperator*.
- E.S.E. East-south-east, the point of the compass midway between east and south-east.
- etc. Etcetera, meaning and others.
- Ex-. Formerly.
- F. or Fahr. The measurements of the Fahrenheit thermometer.
- f. Farthing, florin, franc, foot, or fathom.
- F.A.S. Fellow of the Society of Arts or Fellow of the Antiquarian Society.
- F.B.S. Fellow of the Botanical Society.
- fcp. Foolscape, a size of paper.
- F.C.S. Fellow of the Chemical Society.
- F.D. or Fid. Def. Defender of the Faith, from the Latin words *Fides defensor*.
- F.G.S. Fellow of the Geological Society.
- fl. Florin.
- Fla. Florida, one of the states of U.S.A.
- F.L.S. Fellow of the Linnean Society.
- F.-M. Field-marshal.
- fm. Fathom.
- f.o.b. Free on board. A commercial term.
- F.P. Fire plug, frequently seen on walls, indicating that there is a fire plug near that spot.
- fr. Franc, the French coin.
- F.R.A.S. Fellow of the Royal Astronomical Society or Fellow of the Royal Asiatic Society.
- F.R.C.P. Fellow of the Royal College of Physicians.
- F.R.C.S. Fellow of the Royal College of Surgeons.
- F.R.G.S. Fellow of the Royal Geographical Society.
- F.R.H.S. Fellow of the Royal Horticultural Society.
- F.R.I.B.A. Fellow of the Royal Institute of British Architects.
- F.R.Met. S. Fellow of the Royal Meteorological Society.
- F.R.S. Fellow of the Royal Society.
- F.R.S.L. Fellow of the Royal Society of Literature.
- F.S.A. Fellow of the Society of Arts or Fellow of the Society of Antiquaries.
- F.S.S. Fellow of the Statistical Society.
- ft. Foot, feet, or fort.
- F.Z.S. Fellow of the Zoological Society.
- G. or gm. Gramme, the French weight.

- Ga. Georgia, one of the states of U.S.A.  
 G.B. Great Britain.  
 G.C.B. Knight Grand Cross of the Order of the Bath.  
 G.C.H. Knight Grand Cross of Hanover.  
 G.C.I.E. Knight Grand Commander of the Order of the Indian Empire.  
 G.C.L.H. Grand Cross of the Legion of Honour.  
 g.c.m. Greatest common measure.  
 G.C.M.G. Knight Grand Cross of the Order of St. Michael and St. George.  
 G.C.S.I. Knight Grand Commander of the Order of the Star of India.  
 G.C.V.O. Knight Grand Cross of the Royal Victorian Order.  
 G.F.S. Girls' Friendly Society.  
 gm. Gramme  
 G.M. Grand Master of Masons.  
 G.O.M. Grand Old Man, a term applied to the late Mr. Gladstone.  
 G.P.O. General Post Office.  
 gr. Grain.  
 gs. Guineas.  
 gu. Guinea.  
 H.B.M. His or Her Britannic Majesty.  
 H.C.M. His or Her Catholic Majesty.  
 H.G. Horse Guards or His Grace.  
 H.H. His or Her Highness.  
 H.I.H. His or Her Imperial Highness.  
 H.M. His or Her Majesty.  
 H.M.C. His or Her Majesty's Customs.  
 H.M.I.S. His or Her Majesty's Inspector of Schools.  
 H.M.S. His or Her Majesty's Ship. His or Her Majesty's Service.  
 H.P. Half pay.  
 h.p. Horse power.  
 H.R. H'se of Representatives  
 H.R.E. Holy Roman Emperor or Holy Roman Empire.  
 H.R.H. His or Her Royal Highness.  
 H.R.I.P. Here rests in peace. The letters stand for the Latin words *Hic requiescat in pace*.  
 H.S.H. His or Her Serene Highness.  
 H.S.S. Fellow of the Historical Society. The letters stand for the Latin words *Historia Societatis Socius*.  
 I. Idaho, one of the states of U.S.A.  
 Ia. Iowa, one of the states of U.S.A.  
 Ib. or Ibid. In the same place, standing for the Latin word *Ibidem*.  
 I.C.E. Institute of Civil Engineers.  
 I.C.S. Indian Civil Service.  
 Ida. Idaho, one of the states of U.S.A.  
 I.D.B. Illicit diamond buying.  
 i.e. That is. The letters stand for the Latin words *id est*.  
 I.H.S. Jesus, from the first three letters of the name when written in Greek capitals. It is sometimes erroneously supposed to stand for *Jesus Hominum Salvator*, three Latin words meaning Jesus, Saviour of men.  
 Ill. or Ills. Illinois, one of the states of U.S.A.  
 I.L.P. Independent Labour Party.  
 I.M.S. Indian Medical Service.  
 in. Inch or inches.  
 I.N.D. In the Name of God, standing for the Latin words *In Nomine Dei*.  
 Ind. Indiana, one of the states of U.S.A.  
 Ind. T. Indian Territory, a former district in U.S.A.  
 I.N.R.I. Jesus of Nazareth, King of the Jews. The letters stand for the Latin words *Jesus Nazarenus Rex Judæorum*, which were written above the Cross. J and I are the same letters in Latin.  
 Io. Iowa, one of the states of U.S.A.  
 I.O.F. Independent Order of Foresters.  
 I.O.G.T. Independent Order of Good Templars.  
 I.O.U. I owe you.  
 I.R. Internal Revenue.  
 J.H.S. The same as I.H.S.  
 J.P. Justice of the Peace.  
 Jr. or Jun. Junior.  
 J.U.D. Doctor of Canon and of Civil Law. The letters stand for the Latin words *Juris Utriusque Doctor*.  
 Kan., Kans. Kansas, one of the states of U.S.A.  
 K.B. Knight of the Bath or King's Bench.  
 K.C. King's Counsel.  
 K.C.B. Knight Commander of the Order of the Bath.  
 K.C.H. Knight Commander of the Order of Hanover.  
 K.C.I.E. Knight Commander of the Order of the Indian Empire.  
 K.C.M.G. Knight Commander of the Order of St. Michael and St. George.  
 K.C.S.I. Knight Commander of the Order of the Star of India.  
 K.C.V.O. Knight Commander of the Victorian Order.  
 Ken. or Ky. Kentucky, one of the states of U.S.A.  
 Kg. Kilogramme, the French weight.  
 K.G. Knight of the Garter.  
 K.G.C. Knight of the Grand Cross.  
 K.G.C.B. Knight of the Grand Cross of the Bath.  
 K.G.F. Knight of the Golden Fleece.  
 K.H. Knight of the Order of Hanover.  
 K.L.H. Knight of the Legion of Honour.  
 Km. Kilometre, the French measure, equal to  $\frac{5}{8}$  mile.  
 Knt. or Kt. Knight.  
 K.P. Knight of the Order of St. Patrick. Knight of Pythias.  
 K.S.I. Knight of the Order of the Star of India.  
 K.T. Knight of the Order of the Thistle. Knight Templar.  
 Kt. Bach. Knight Bachelor.  
 Ky. Kentucky, one of the states of U.S.A.  
 L. Lake, Book, Latin *liber*.  
 l. Latitude.  
 lb. Pound or pounds, from the Latin word *libra*, meaning a pound.  
 l.b.w. Leg before wicket.  
 l.c. Lower-case.  
 L.C.B. Lord Chief-baron.  
 L.C.C. London County Council.  
 l.c.m. Least common multiple.  
 Leip. Leipsic, a city in Germany.  
 £E. Egyptian pound, which is equal to  $20\frac{1}{4}$ .  
 L.I. Light Infantry.  
 Lieut. Lieutenant.  
 Lim. or Ltd. Limited.  
 LL.B. Bachelor of Laws. The letters stand for the Latin words *Legum Baccalaureus*.  
 LL.D. Doctor of Laws. The letters stand for the Latin words *Legum Doctor*.  
 Lou. Louisiana, one of the states of U.S.A.  
 L.R.C.P. Licentiate of the Royal College of Physicians.  
 L.R.C.S. Licentiate of the Royal College of Surgeons.  
 L.S. Linnæan Society.  
 L.S.A. Licentiate of the Society of Apothecaries.

- L.s.d. Pounds, shillings, and pence, from the Latin *libra, solidi, denarii*.
- Lt. or Lieut. Lieutenant.
- £T. Turkish pound=18s.
- M. 1,000, from the Latin *mille*, a thousand.
- M. or Mons. Short for Monsieur, the French word for Mr.
- M.A. Master of Arts.
- Mass. Massachusetts, one of the states of U.S.A.
- M.B. Bachelor of Medicine. The letters stand for the Latin words *Medicina Baccalaureus*.
- M.C. Member of Congress
- Md. Maryland, one of the states of U.S.A.
- M.D. Doctor of Medicine. The letters stand for the Latin words *Medicina Doctor*.
- Mdlle. or Mlle. The French for Miss, being a contraction of *Mademoiselle*.
- Mdm. or Mme. Madam.
- Me. Maine.
- M.E. Mining Engineer. Methodist Episcopal.
- M.F.H. Master of Fox Hounds.
- mg. milligramme.
- M.I.C.E. or M.Inst.C.E. Member of the Institute of Civil Engineers.
- Mich. Michigan, one of the states of U.S.A.
- Minn. Minnesota, one of the states of U.S.A.
- Mis. Missouri, one of the states of U.S.A.
- Miss. Mississippi, one of the states of U.S.A.
- Mlle. See Mdlle.
- MM. Short for Messieurs, the plural of Monsieur.
- M.M. Their Majesties.
- Mo. Missouri, one of the states of U.S.A.
- Mont. Montana, one of the states of U.S.A.
- M.P. Member of Parliament.
- M.P.S. Member of the Philological or of the Pharmaceutical Society.
- Mr. Master or Mister.
- M.R.A.S. Member of the Royal Academy of Sciences or of the Royal Asiatic Society.
- M.R.C.C. Member of the Royal College of Chemistry.
- M.R.C.S. Member of the Royal College of Surgeons.
- M.R.C.V.S. Member of the Royal College of Veterinary Surgeons.
- M.R.G.S. Member of the Royal Geographical Society.
- M.R.I. Member of the Royal Institution.
- M.R.I.A. Member of the Royal Irish Academy.
- Mrs. Mistress.
- MS. Manuscript. The plural is MSS.
- M.S. Master of Science.
- m.s.l. Mean sea-level.
- M.S.S. Member of the Statistical Society.
- Mus.B. Bachelor of Music.
- Mus.D. Doctor of Music.
- N. North.
- N.A. North America; also National Academy.
- N.B. Note well. The letters stand for the Latin words *Nota bene*. Also refers to North Britain, or Scotland, and to New Brunswick.
- N.C. North Carolina, one of the states of U.S.A.
- N.C.O. Non-Commissioned Officer.
- N. Dak. North Dakota, one of the states of U.S.A.
- N.E. North-east or New England.
- Neb. or Nebr. Nebraska, one of the states of U.S.A.
- Nev. Nevada, one of the states of U.S.A.
- N.F. Newfoundland.
- N.H. New Hampshire, one of the states of U.S.A.
- N.J. New Jersey, one of the states of U.S.A.
- N.N.E. North-north-east, the point in the compass midway between north and north-east.
- N.N.W. North-north-west, the point in the compass midway between north and north-west.
- No. Number. It is short for the Latin word *Numero*.
- n.o.p. Not otherwise provided.
- N.P. Notary public.
- N.S. New style. See O.S.
- N.S. Nova Scotia.
- N.S.P.C.C. National Society for the Prevention of Cruelty to Children.
- N.W. North-west.
- N.W.T. North West Territories, in Canada.
- N.Y. New York, one of the states of U.S.A.
- O. Ohio, one of the states of U.S.A.
- Ob. Died, standing for the Latin *Obiit*.
- O.E. Old English.
- O.F. Odd Fellow.
- O.H.M.S. On His or Her Majesty's Service. Ohms as a word means certain units used in electricity, so called from Professor Ohm.
- O.K. All correct, from the American term *Orl Korrekt*.
- Ont. Ontario, a province of Canada.
- %. Per cent.
- O.R.C. Orange River Colony.
- Ore, or Oreg. Oregon, one of the states of U.S.A.
- O.S. Old style, referring to the Calendar before its change in Queen Anne's reign.
- oz. Ounce. The z represents a curious character that was used in old manuscripts to denote an abbreviation.
- p. Page; the plural form is pp.
- Pa. Pennsylvania, one of the states of U.S.A.
- P.C. Privy Councillor, police constable, or postcard.
- P.E.I. Prince Edward Island.
- Penn. Pennsylvania, one of the states of U.S.A.
- Ph.B. Bachelor of Philosophy. The letters stand for the Latin words *Philosophia Baccalaureus*.
- Ph.D. Doctor of Philosophy. The letters stand for the Latin words *Philosophia Doctor*.
- P.M. Afternoon, standing for the Latin words *post meridiem*; postmaster or past-master. The letters also stand for *post mortem*, the examination of a dead body.
- P.M.G. Postmaster-general.
- P.O. Post office, patent office, or postal order.
- P.O.D. Paid on delivery.
- P.O.O. Post office order.
- P.P. Parish Priest.
- pp. Pages.
- P.P.C. To take leave. The letters stand for the French words *pour prendre congé*.
- P.P.S. Additional postscript, see P.S.
- P.R.A. President of the Royal Academy.
- P.R.I.B.A. President of the Royal Institute of British Architects.
- P.R.S. President of the Royal Society.
- P.S. Pharmaceutical Society or Philological Society.
- P.S. Postscript—a part of a letter written after or below the signature of the writer, from the Latin *post scriptum*.
- pt. Part, or pint.
- pwt. Pennyweight.
- Q.E. Which is. The letters stand for the Latin words *quod est*.
- Q.E.D. Which was to be demonstrated. The letters stand for the Latin words *quod erat demonstrandum*.



- Q.E.F. Which was to be done, standing for the Latin words *Quod erat faciendum*.
- Q.M. Quartermaster.
- Q.M.G. Quartermaster-general.
- q.s. As much as will suffice. The letters stand for the Latin *quantum sufficit*.
- q.v. Which see. The letters stand for the Latin words *quod vide*.
- R. King or queen, from the Latin *Rex* or *Regina*.
- R. Take, used in doctor's prescriptions, and standing for the Latin word *recipe*.
- R.A. Royal Academy or Royal Artillery.
- R.A.M. Royal Academy of Music.
- R.A.S. Royal Asiatic Society.
- R.C. Roman Catholic.
- R.C.M. Royal College of Music.
- R.C.S. Royal College of Surgeons.
- Rev. Reverend; also revise.
- R.F. French Republic; for the French words *République Française*.
- R.G.G. Royal Grenadier Guards.
- R.G.S. Royal Geographical Society.
- R.H. Royal Highness.
- R.H.A. Royal Horse Artillery.
- R.H.G. Royal Horse Guards.
- R.H.S. Royal Humane Society, Royal Historical Society, or Royal Horticultural Society.
- R.I. Rhode Island, one of the states of U.S.A.
- R.I.B.A. Royal Institute of British Architects.
- R.I.P. Rest in peace. The letters stand for the Latin words *Requiescat in pace*.
- R.M. Royal Mail or Royal Marines.
- R.M.A. Royal Marine Artillery.
- R.M.L.I. Royal Marine Light Infantry.
- R.M.S. Railway Mail Service.
- R.N. Royal Navy.
- R.P.O. Railway Post Office.
- R.R. Railroad.
- R.S. Royal Society.
- R.S.A. Royal Society of Antiquaries.
- R.S.L. Royal Society of Literature.
- R.S.M. Royal School of Mines.
- R.S.O. Railway sub-office, a postal term.
- R.S.P.C.A. Royal Society for the Prevention of Cruelty to Animals.
- R.S.S. Fellow of the Royal Society. The letters stand for the Latin words *Regiæ Societatis Socius*. The letters S.R.S. are also used.
- R.S.V.P. Reply, if you please. The letters stand for the French words *Répondez, s'il vous plaît*.
- R.V. Rifle Volunteers or Revised Version (of the Bible).
- S. Shillings—from the Latin *solidi*; south, saint, or seconds.
- S.A. South Africa.
- S.A.S. Fellow of the Society of Antiquaries. The letters stand for the Latin words *Societatis Antiquariorum Socius*.
- S.C. South Carolina, one of the states of U.S.A.
- Sc.B. Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus*.
- Sc.D. Doctor of Science. The letters stand for the words *Scientiæ Doctor*.
- s.d. Without day; indefinitely; a contraction for *sine die*, Latin.
- S. Dak. South Dakota, one of the states of U.S.A.
- S.E. South-east.
- s.g. Specific gravity.
- S.M. The French form of his or her Majesty, standing for the French words *Sa majesté*.
- S.P.C.C. Society for the Prevention of Cruelty to Children.
- S.P.G. Society for the Propagation of the Gospel.
- S.P.Q.R. The Senate and People of Rome. The letters stand for the Latin words *Senatus Populusque Romanus*.
- S.R.S. Fellow of the Royal Society. The letters stand for the Latin words *Societatis Regiæ Socius*.
- SS. Steamship.
- S.S.E. South-south-east—the point of the compass midway between south and south-east.
- S.S.U. Sunday School Union.
- S.S.W. South-south-west, the point of the compass midway between south and south-west.
- St. Street, saint, or strait.
- S.W. South-west or senior warden.
- Tenn. Tennessee, one of the states of U.S.A.
- Tex. Texas, one of the states of U.S.A.
- T.R.H. Their Royal Highnesses.
- T.S. Twin screw.
- U.F.C. United Free Church of Scotland.
- U.K. United Kingdom.
- U.K.A. United Kingdom Alliance.
- U.P. United Presbyterian.
- U.S. United States, or United Service, i.e., the Army and Navy.
- U.S.A. United States of America.
- U.S.M. United States Mail, or Marines.
- V. Roman numeral for 5.
- v. Against, standing for the Latin word *versus*; or see, standing for the Latin word *vide*.
- V.A. Royal Order of Victoria and Albert.
- Va. Virginia, one of the states of U.S.A.
- V.C. Victoria Cross, vice-chancellor, or vice-consul.
- Verm. or Vt. Vermont, one of the states of U.S.A.
- v.g. For example, standing or the Latin words *verbi gratia*.
- V.P. Vice-president.
- V.R. Queen Victoria, standing for the Latin words *Victoria Regina*.
- V.R.I. Victoria, Queen and Empress, standing for the Latin words *Victoria Regina et Imperatrix*.
- V.S. Veterinary Surgeon.
- Vt. or Verm. Vermont, one of the states of U.S.A.
- W. West.
- Wash. Washington, one of the states of U.S.A.
- W.C. West Central, a postal district in London.
- W.C.T.U. Women's Christian Temperance Union.
- Wis. or Wisc. Wisconsin, one of the states of U.S.A.
- W.N.W. West-north-west, the point in the compass midway between west and north-west.
- W.S.W. West-south west, the point in the compass midway between west and south-west.
- wt. Weight.
- W. Va. West Virginia, one of the states of U.S.A.
- Wyo. Wyoming, one of the states of U.S.A.
- yd. Yard.
- Y.M.C.A. Young Men's Christian Association.
- Y.W.C.A. Young Women's Christian Association.

## WHY THINGS ARE DONE

### WHY A HORSE FOLLOWS HIS MASTER'S FUNERAL

AT the funeral of the late King Edward VII. his horse was led behind the coffin in the procession, and this practice is often followed at the funerals of cavalry officers. It is a very old custom, dating back to the times when men were more or less savage. When a dead warrior was buried, his favourite war horse was led in the funeral procession, so that it might be offered in sacrifice at the graveside, and the remains were either cremated or buried with those of his master.



### WHY SAINTS ARE DRAWN WITH HALOS

STATUES of gods, in ancient times, used to be decorated with a circlet of stars round the head, and Roman emperors, claiming to be equal with the gods, took to wearing a similar decoration. During the early days of the Christian Church, however, this sort of decoration was avoided in Christian art. Then someone thought of putting a broad circular brass plate round the heads of statues which were exposed to the weather, as protection against snow and rain. Later it became customary to employ the same device for statues indoors. Then, when men began to paint sacred pictures, they copied the decoration from statues.



### WHY A LECTERN IS MADE LIKE AN EAGLE

OF many forms of heathen worship, the practice of regarding animals and birds as idols was one of the most common. The practice was world-wide at one time. Then the human mind improved. It was seen that these animals and birds which men worshipped were not worthy to be worshipped. Men came to worship what we call an abstract idea, but as an idea must have form and substance if it is to be perceived by the human senses, they chose certain forms of life to represent the ideas that they worshipped. Men chose birds and animals as representing various saints. The eagle was chosen as the emblem of St. John, and, as the image of an eagle made a handsome and convenient reading-desk, it became generally adopted in churches by people who, perhaps, had no idea that originally it stood for St. John.



### WHY THE KING HAS AN ORB AND SCEPTRE

THESE are emblems carried only at coronations or on other high State occasions. The orb used to be carried by the Roman emperors, and our Saxon kings borrowed the idea from Rome. The round orb, or globe of gold, carried by the emperors represented the whole world, of which, at the time, Rome was mistress. In those days the orb was crowned with a golden eagle. Constantine the Great first placed a cross at the top, and in that form we ourselves now use the orb. The sceptre is another old-time emblem. The king, in by-gone days, used to have a spear to lean upon at high ceremonies. As the times grew more peaceful and polite, the spear disappeared, and a rod of gold was made to take its place.



### WHY THE COMPASS HAS A FLEUR-DE-LYS

IT is usual on the card of a mariner's compass to mark the north by a fleur-de-lys, which is French for flower of the lily. This has been the practice in Europe for six centuries. The reason that the fleur-de-lys came to be used for that purpose is that it was the heraldic badge of Charles of Anjou, the King of Naples at the time that Flavio Gioja, the Neapolitan mariner, im-



proved the compass and made it practically indispensable to navigators. As a compliment to King Charles, Gioja adopted the fleur-de-lys as the ornamental sign that should mark the north point in his improved compass, and the custom has continued.

### WHY A COAT HAS BACK BUTTONS

A MAN's frock or morning coat always has two buttons at the back just where the tail of the coat begins. These are simply for ornament now, and serve no useful purpose, but they are a survival from the time when back buttons were necessary. The frocks of coats were at one time worn very long, and in order that the wearer might not be hampered in his movements when walking quickly, buttons were put on the back of the coat, and buttonholes in the corners of the skirts, so that the skirts might be buttoned up.



THE NEXT BOOK OF WONDER IS ON PAGE 568.



CONTINUED FROM PAGE 5520.

## THE KING'S GUEST

ONCE upon a time there was a rich man who was very cruel to the poor people living on his estates. They were very poor people indeed, and the rich man, who owned all the land and employed all the people, paid them very low wages, and oppressed them in every way. There came a famine in the land, and the poor people went to the rich man's castle and begged for bread, but the rich man refused them even a crust.

The king of the country heard all this, and he sent for the rich man to come and dine with him. You may imagine how proud the rich man was when the king's invitation came. He got out his best horses and his best carriage, and dressed up his servants in wonderful garments, and drove to the king's palace.

The king led him into the dining-room, where the table was laid for two. It was laden with lovely flowers and fruits, and foods of every kind, and there were the king's servants to wait upon each of them.

They brought the soup to the king, and he drank it, and when he had nearly finished it they brought the rich man some soup. But just as he was about to taste it the king finished his soup, and the waiters took the plates away, so that the rich man had not even a spoonful. Then they brought the king another dish, which he enjoyed, and just as he was finishing it they brought the

rich man's dish. But almost before he could touch his knife and fork, the king had finished, and both plates were taken away.

And so they brought the king dish after dish, and the king, as he enjoyed them, said continually to his guest how good these things were and how much he hoped the rich man was enjoying them. Yet every time the rich man tried to taste his food, a waiter came and took his plate away. And so at last the dinner came to an end, and the rich man had not had a single bite of food. Not even a crust of bread could he get, for the waiters forgot to bring him any; and when you are dining with a king you must not ask for anything. And, of course, the rich man was very hungry, for he had been so busy getting ready for this dinner with the king, that he had had nothing to eat all day, and the dinner had lasted a long time.

When the meal ended, the king led the rich man out of the dining-room into the hall, and bade him good-night, and set him out on the long, long road to his castle. Not a word did he say about the strange dinner at which his guest had eaten nothing, but the rich man went home almost famished with hunger, and he never forgot the lesson the king had silently taught him. He was very good to the poor after that, and became their true friend.

## THE WONDER BOOK

THE forest was very wonderful. The child who roamed through it felt the wonder of it seize him with a strange mystery and power.

Every day he wandered down its shady paths, and into its secret places.

The splashing of sunlight upon green leaves, the sound of falling rain, the sighing of boughs in the wind, filled him with an exquisite joy that was at the same time a sorrow.

And ever as he grew to know the forest, he felt that over its solitudes there brooded an invisible presence.

He seemed to see the print of its feet in the grass, to hear its voice in the wind, and once he felt its trailing garments brush past him, and a soft breath fan his cheeks.

It became the desire of his heart to find the secret of the forest. At last he found it.

One day he followed a tiny brook farther and farther from its source, deeper and deeper into the forest, until he came to a place shut in by the trees where the brook formed a still pool.

An old, old woman sat by the pool. Then, as he looked at her, he saw her dip her feet into the pool, and moment by moment she became a new creature.

She held out her arms to the winds, and they gave her their strength and freedom; she called to the trees, and they gave her a supple grace and form; she caught the sunbeams, and imprisoned them in her hair; and the depths and stillness and flashing lights of the pool passed into her eyes.

Other children would have fled in terror, but to this child fear was unknown, and he went forward until he came face to face with the woman who now stood in glorious beauty as wonderful and changeable as the moon.

They gazed deep into each other's eyes; then the woman bent forward and touched his brow.

"You are one of those who are not afraid," she said.

Then she led him into the very heart of the forest. Here the thick trees and undergrowth could not push themselves; they ceased at the margin of a circle of green grass as soft and fine as a fairy carpet. Overhead, the sky shone into the circle like a great blue eye gazing down upon it, making it glow and gleam.

In the centre there stood an altar fashioned of different woods from the forest, and upon the altar lay a great book. The woman led the child up to the book, and he looked into its pages.

Oh, the marvel of it! He seemed to be looking into a picture of the forest, and yet it was not a picture, for the trees bent and swayed, the brook rippled, and the grass waved. He saw the hidden haunts of the squirrel and the mole, and of all the shy wood things. He saw deeper still; he saw the struggle of the seed with the earth, and how the grass and flowers and trees grew into being.

Then into the moving picture shone the faces of beautiful maidens; they passed between the trees, the sunlight gleaming on their hair; knights in armour rode down the paths; black-cowled monks paced slowly along, followed by leaping jesters in their coloured coats and jingling bells. Faster and faster they crowded into the picture, until the boy's dazzled sight could bear no more.

Every day from henceforth the boy went to the pool in the forest, and every day the woman met him and led him to the book, and turned over its pages for him.

Sometimes the pictures were, like the first ones he had seen, of this same forest, peopled with lovely ladies and courteous knights. Sometimes he saw the fairies at work and play.

Then the pages would open, and show the streets of a great city; the boy would look upon the crowds, the merchants, the wealthy citizens, the beggars, the richly-dressed women.

Again he would look into the book and see wonderful palaces and temples and cities of long ago; he saw the courts of great kings and queens long dead.

His heart became bound up in the book, and he thought of little else.

He was so dreamy and idle, and spent so much time wandering in the forest, that everyone thought him a most stupid boy. But when the boy grew older and had to leave his home and the beautiful forest, he wrote down all that he had seen in the Wonder Book. And all the world loves to read about the things he saw, and some day you will read them, too. For the wonderful forest was the Forest of Arden, and the boy's name was William Shakespeare.

## THE BOY SHAKESPEARE IN THE FOREST OF ARDEN



As a boy, Shakespeare loved to roam through the forest and to feel its mystery and power. Every day he wandered down its shady paths and into its most secret places until he grew to know it, and felt that over its solitudes there brooded an invisible presence. He longed to discover the secret of the mystery and power of the forest.



## PROVERB STORIES

Every nation has its proverbs—short, pithy sayings in which are contained much wisdom. The stories on this page illustrate some of these proverbs.

### THE FARMER AND HIS SACKS

#### *Repay Kindness with Kindness*

A FARMER was taking his grist to the mill in sacks thrown across the back of his horse. On the way, the horse stumbled, and one of the sacks fell to the ground. It was too heavy for him to lift, and he was at a loss to know what to do. As he stood wondering, he saw a horseman coming towards him.

When, however, the rider came nearer, the farmer saw that he was none other than the nobleman who lived in the great house at the top of the hill. It was impossible to think of asking help from one of his rank.

The nobleman, however, was something more than a man with a title—he was a gentleman, and he dismounted.

"I see you have had something of a mishap, friend," he said. "It is fortunate I came along just now, for help is not always handy on these roads."

So saying, he took one end of the sack, the farmer took the other, and the load was once more placed on the horse's back.

"My lord," said the farmer, lifting his cap, "how can I thank you?"

"Easily enough, my good fellow," said the nobleman. "Whenever you see anyone in a difficulty, help him all you can, and that will be thanking me."

### THE BAG OF PEAS

#### *There's no Luck in Laziness*

"Do you believe in luck?" said a king to one of his officers.

"Yes," answered the officer, "I do."

"Ah!" laughed the king. "I am afraid you could not prove to me that there is any such thing in the world."

"That may be, your Majesty," answered the officer; "but if it please you, we might try to find out. I have thought even now of a plan."

He whispered in the king's ear, and his Majesty replied:

"Very good, very good indeed; let us try it without loss of time."

So that night the officer hung a bag from the ceiling of one of the rooms in the palace. What it contained none but the king and the officer knew. Then two men were put into the room. When the door was shut, one of the men

who believed in luck laid himself in a corner and prepared for sleep; the other looked about him, and at once saw the bag hanging from the ceiling.

He reached up and put in his hand, and found some peas. "One might have a worse supper," he thought, as he took out a handful and ate them.

Presently he came on some diamonds, but, in the dark, he thought they were mere stones, and of no value. So he threw them towards his companion, saying:

"You may take the stones for your idleness."

In the morning the king and his officer came to the room, and told each man he might keep what he had found. The one man got the peas which he had eaten; the other got the diamonds.

"Now, your Majesty," said the officer, "what do you say?"

"Truly," answered the king, "you seem to have the best of the argument. There may be such a thing as luck; but it is as rare as peas mixed with diamonds, and so let none hope to live by luck."

### THE TWO KINGS

#### *The Second Word Makes the Quarrel*

THERE was once a king who sent a message to the king of a neighbouring country, saying:

"Send me a blue pig with a black tail, or else——"

To this the other king replied:

"I have not got one; and if I had——"

When the first king got this answer he flew into a great rage, and declared war against the other. For many weary months fighting went on, but at last the two kings arranged a meeting.

"What did you mean," said the first, "by saying 'Send me a blue pig with a black tail, or else——'?"

"Why," he answered, "I meant a blue pig with a black tail, or else some other colour. And now let me ask you what you meant by your message, 'I have not got one, and if I had——'?"

"My meaning was simple enough; for, of course, if I had had such a pig I should have sent it."

"Dear me, how foolish we have been! Let us make peace and be friends."

So peace was made, and the story was written in the annals of both countries to serve as a warning to those that should come after to be slow to take offence.

## THE HUNDRED THOUSAND MONKEYS

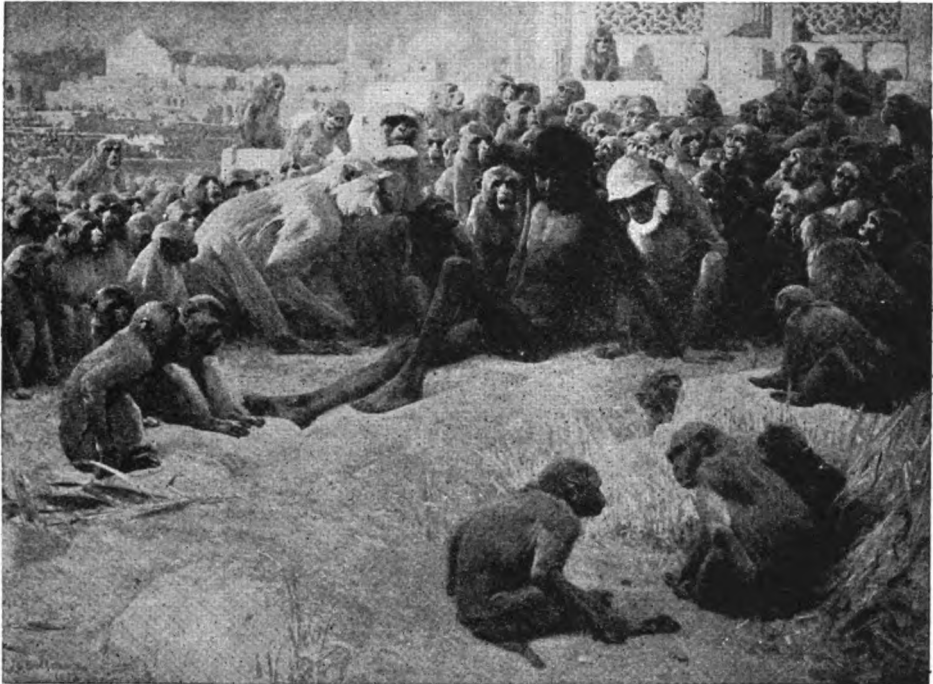
THIS is a story that begins on the banks of the River Ganges, in India.

There are villages on the banks of the Ganges, and in one of them a little boy called Singh lived in a hut with his father and mother. It was his business to make curry for his father and mother while they were busy out of doors.

But one day Singh found it hot and also dull in the hut where he was busy with the curry. The sun was hotter still outside, but when he went to the door and looked out, Singh saw cool shadows under the tree, cooler than the

were snakes, spotted and shiny ones, brown and yellow ones, and black ones, and pale bright green ones, and they hissed and slid away into the long grass. There were bigger things, too.

Singh heard the bamboos crack and the branches break, and saw the long grass wave where the big beasts were stepping. He also heard them roar. He thought they would probably eat him, but he did not mind, because his body was sore. And then a monkey dropped to the ground in front of him. The monkey had been



"AAHI" SAID A HUNDRED THOUSAND SERIOUS-FACED APES, THEIR EYES FIXED ON HIS FACE

This picture is from the painting by J. C. Dollman, A.R.W.S., by permission of Sir Alfred Hickman, Bart.

dark of the hut, because of the breeze that was lifting the big leaves and letting them flap softly back again. So Singh went and lay in the shadow of the tree.

Presently his father and mother came back hungry for their curry, and when they found that Singh had forgotten all about it, they beat him till he was very sore, and then made curry for themselves.

Singh ran away into the forest.

There were parrots in the forest, green and red and yellow, and they shrieked loudly as they flew from the palm to the banyan tree, and from the acacia to the feathery bamboo. There

hanging by one hand from the bough of a tree watching Singh for some time.

"What is the matter with you?" asked the monkey.

"I have been beaten," said Singh.

"No, no, that is not what is the matter with you," said the monkey.

"What is it, then?" said Singh.

"Why, yes. Your beating is over, and your skin is already not so sore as it was. The matter with you is that you want to tell a hundred thousand people about it, and there's no one to listen to you."

"Yes," sobbed Singh, "that is quite true. They are eating curry in the

village, and if I try to tell them about it they will only beat me again, and make me more sore."

"Come with me," said the monkey, "and you shall tell a hundred thousand people, and they shall weep for your sore body, and you will feel better."

He caught Singh with his skinny hand, and ran through the undergrowth of the forest. Singh ran with him for a long time. He was too busy dodging branches, and jumping over fallen logs or puddles of mud, to notice how they went; so that he was not very surprised when the trees came to an end, and the forest opened into a white old city lying in marble ruins. There were fallen temples and wonderful broken pavements. And everything shone dead white in the hot, glaring Indian sunshine.

There were no people in the city, but as for monkeys—there seemed to be more than Singh believed there were in all the forests of the world.

"Tell these people," said the monkey who had brought him. And when the other monkeys crowded up, this monkey looked laughingly at Singh, and went away, and sat alone on the marble steps of what had long ago been a temple.

"I have been beaten and my back is sore," began Singh.

"Aah!" said a hundred thousand serious-faced apes, their eyes fixed steadily on his face.

"Because I lay in the sun and neglected the curry while they were working."

## THE KAFFIR AND THE LION

**A**n old Kaffir was trudging back to his master's farm in Northern Rhodesia when he heard a sound in the bush that made his blood run cold. A white stranger would not have known what the slight but continual crackling in the brushwood meant, but the native knew, and trembled.

A lion was following him, and watching him as a cat watches a mouse. But, not being emboldened by hunger, it was waiting till nightfall to make its spring. Unhappily, it was already growing dusk, and the farm was still far off, and the old man had no other weapon than the stick that he was tottering along with.

How could he escape? The Kaffir glanced anxiously around. There was no bush high and strong enough to protect him from the lion. But as he went along the old negro worked out

"Aah!" said the hundred thousand apes, all looking very much interested.

"My name is Singh, and I am very miserable."

"Aah!" said the apes.

"The people of the village have cast me out with a sore skin and no curry."

"Aah!" said the apes.

"A sore skin and no curry," said Singh again, for he could not think of anything else to say.

"Aah!" said the apes, as if these were only the beginnings of his troubles.

Singh could not think of anything else, and he was very unhappy, because he wanted to complain.

"Aah!" said the apes.

"A sore skin," said Singh miserably.

"Aah!" said the apes impatiently. He heard some of them say, "Is that all?"

"No curry," he said once more; and then getting up quickly, he looked for the monkey who had brought him, and saw him sitting on the temple steps.

"Please take me back," he said. "I am not miserable enough for these people."

And the monkey said, "I thought so," and laughed, and took him back. But he was not beaten again. His mother was glad to see him, and gave him hot curry and put him to bed.

Now, that is the best of all ways to be comforted. If ever you feel miserable, go and tell it to a hundred thousand serious-faced monkeys, and you will find that you are not miserable enough.

a plan, a simple but very daring plan, which probably no white man would ever have thought of.

On coming to a low hill that sloped gently up on one side, and then ended in a sudden precipice, the native slowly walked up it, and sat on the edge of the rock. Half turning his head, he saw the lion watching him.

As soon as it grew dark, the old man climbed down to a footing underneath the precipice, and, putting his hat and coat on his stick, he lifted it above the rock. In the meantime the lion had been creeping up. When within striking distance, he made a sudden leap at the hat and coat and stick, and over the precipice he went, and landed on the plain with a broken neck. The next morning the wise old Kaffir had the pleasure of skinning his dreaded enemy.

# THINGS TO MAKE AND THINGS TO DO

CONTINUED FROM PAGE 5532.



## HOW TO MAKE A SEE-SAW

A SEE-SAW is one of the simplest things to make, and a great deal of amusement can be obtained from it in the garden, not only by boys and girls, but by the grown-ups too. All we really need is a good stout plank of wood that will bear the weight of two people—one at each end—without bending, and some sort of a support upon which the plank may be placed, and which will act as a fulcrum, or pivot. For a see-saw is the simplest kind of lever, and, as we know, a lever has three parts. In the picture at the top of this page the trestle is the fulcrum, the lady is the weight, and the little girl is the power that has raised the lady. In a moment the lady will go down, when she will become the power, and the little girl will go up and be the weight.

The plank, of course, we cannot make, but must obtain it from some builder or woodyard. It should be of sound wood, about 1½ inches thick, 12 inches wide, and 10 or 12 feet long. It may be painted, or not, as we like, but it certainly must be planed very smooth. If we want to have a handle at each end for holding when we are sitting upon the plank and it is going up and down, we can easily make one. We simply fasten an upright batten of wood to the plank, with an iron angle, such as may be bought at any hardware store, in the way shown in the bottom picture on this page. It should be

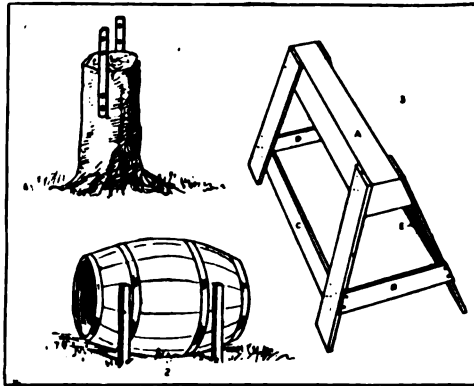
put in the middle of the plank's width, and should be about 18 or 20 inches from the end. Now we come to the fulcrum, or support, and here we may select almost anything that is most handy.

If there is a wide and sound stump of a tree that has been chopped down, standing about 2½ feet high, in some suitable position, it will serve our purpose admirably. To prevent the plank slipping off as it is worked backward and forward, we can smooth the sides of the stump and screw an iron angle at each side, as shown in picture 1. If no such stump is standing, but the trunk of a felled tree is lying on the

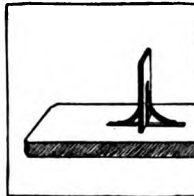
ground, this, of course, does equally well; or even better, for the roundness of the trunk enables the see-saw to work better.

A barrel placed on the ground and secured with stakes, as shown in picture 2, makes a very good fulcrum. A mound of earth also will provide all that is necessary for our purpose. If none of these supports are available, we may make a trestle like that being used for the see-saw in the picture at the top of this page. It can be made as shown in picture 3. We need a stout beam (A), 2 or 2½ feet long, 4 inches deep, and 4 inches wide

at the bottom. It should slant off toward the top, along its whole length, to 3 inches, and any carpenter will make the beam this shape for us if we have not the tools to do it ourselves. When we obtain some wood



DIFFERENT KINDS OF SUPPORTS



SEE-SAW HANDLE

suitable for the legs and supports, about 3 inches wide and  $1\frac{1}{2}$  or  $1\frac{1}{4}$  inches thick. We saw off four legs, say,  $2\frac{1}{2}$  or  $2\frac{1}{4}$  feet high, and screw these on to the beam, using five screws, as shown by the dots in picture 3. We should use long screws that will firmly grip the two pieces of wood; but they should not be very thick, or they may split the wood.

Then we saw off four pieces of wood, B, C, D, and E, and screw them to the legs for supports, as shown in the picture. All we now need to do is to place the trestle on the ground, drive in a little stake on each side to steady it—as shown in the picture at the top of the previous page—place the plank upon the trestle, and then see-saw as much and as often as we

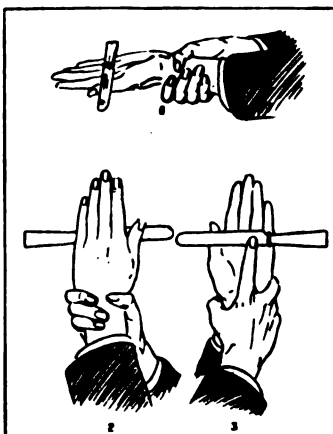
like. If two children are using the see-saw, the plank should be placed upon the support with half the plank on each side; but if a grown-up person is to be at one end, and a boy or girl at the other, then there should be a greater length of plank on the side upon which the child sits.

If the grown-up person at one end weighs 9 stone and is 3 feet from the middle of the swing, then the boy, if he weighs 3 stone, to balance the grown-up person, must be 9 feet from the middle. If we know the weight of the two persons, we can always tell exactly at what distance from the middle they will balance each other, as the power at work depends on weight and on distance. Once get our see-saw and we can have great fun.

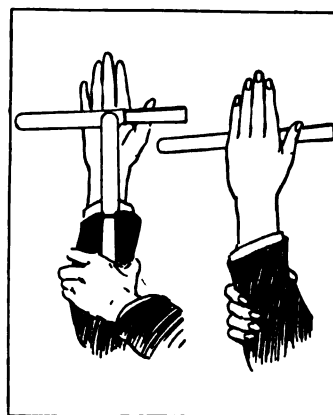
## THE MYSTERY OF THE SUSPENDED KNIFE

AN amusing and simple trick that will greatly surprise all those who see it performed, unless they know the secret of how it is done, is that of the mysterious knife. We take an ordinary dinner-knife, and place it on the palm of the hand, as shown in picture 1. Then, talking a great deal about animal magnetism and the wonders of attraction, and explaining that it is necessary to keep a firm grip on our wrist in order to concentrate the magnetism, we cleverly turn over the hand with the knife, and, holding it up, show the knife apparently suspended without being held, as in picture 2. If the trick is carefully performed, the spectators will be greatly mystified. The explanation is given in picture 3. In turning over the hand with the knife, we quickly stretch out the forefinger of the right hand, and hold the knife up with this, while the thumb and other three fingers continue to grip the left wrist. If we continue to talk, to divert the attention of the spectators, and do not hold up the knife too long at one time, it is quite unlikely that anyone will notice that only three fingers of the right hand are visible. If, however, they do suspect that we are supporting the knife, then we can offer to do the trick again, removing the right hand away from the wrist and placing it so that the fingers of that hand could not possibly touch the knife. What the audience then see is shown in picture 4. This trick looks even more mysterious than the other, and if it is cleverly and carefully performed, there seems to be no explanation of how the knife is suspended upon the palm of the left hand, for the audience can see no apparent means of support. It is, however, done quite simply, and the

method of supporting the knife is shown in picture 5. The thumb of the right hand holds the second knife close against the left wrist and



HOW THE KNIFE IS SUSPENDED



ANOTHER METHOD OF SUPPORT

blunt knives are used, and should there be any difficulty in obtaining suitable knives, we may use any other flat, long, and narrow objects that are not too heavy. Ordinary twelve-inch boxwood rules are very good objects with which to perform the trick, and if these are not available, ordinary flat sticks of wood are almost equally good. It is always wise to practise such a trick a good deal when we are by ourselves before trying to astonish our friends, as so much depends upon quickness and neatness in our movements, otherwise the method of supporting the knife will be noticed. Although, as already stated, we should not hold the knife up too long at one time, or our friends may discover the secret of the trick, yet we can show them the wonderful performance again and again, taking the greatest care always to keep the second knife that supports the other well out of sight of the people who are watching.



## SOME CLEVER BALANCING FEATS

THERE are a number of balancing feats which cause great astonishment to many who see them, and which seem very difficult indeed to perform and yet are really simple. To those, however, who know a little science, and understand the meaning of the phrase, *centre of gravity*, they do not seem at all wonderful, for the true explanation is perfectly clear.

Picture 1 shows a balancing feat that may seem difficult, but is so easy that any boy or girl can do it. We take a piece of wood about ten or twelve inches long, and into it, near one end, we stick the blades of two knives, as shown. With a little adjustment, according to the size and weight of the knives and the length of the wood, we can balance the tip of the wood on the thin edge of a wine-glass or tumbler.

A somewhat similar experiment is that shown in picture 5, where a stick is balanced with perfect ease upon the finger. Some little distance from the top we insert two knives or two forks, and by means of these the stick is made to balance perfectly. Rather more difficult is the experiment which we see in picture 2. In this we are able to spin a quarter upon its edge on the point of a needle. First of all we take a bottle, such as a vinegar bottle, with a cork in it, and into this cork we push a needle, head downward, so that the point is sticking up. Now we take another cork, and in the end make a slit, into which we fix a quarter. Then into the sides of the cork we stick two ordinary table-forks, at an angle. We are now ready to try the experiment. We put the edge of the quarter upon the point of the needle, as shown in the picture, and if the forks have been properly arranged in the cork the quarter will balance easily. The coin, with the cork and forks, can then be spun round and round on the point.

Perhaps we may like to make a balancing toy which we can keep to show to our friends. Picture 3 shows such a toy. On stout cardboard we draw a prancing horse, with its head and legs very much forward. Across the back, and flowing out under the body in the direction of the tail, is a sash or rug, and at the end of this we fix a flat weight of some kind and cover it with paper. When we stand the horse upon its hind legs upon the edge of a table, as seen in the picture, it stands upright and firm.

Another interesting balancing feat, that appears very wonderful, can be performed with a pail of water, as shown in picture 4.

Upon a table, a stick, *A B*, is laid, and a pail is hung upon this in the manner indicated. The handle, *c*, is at an angle to the pail, and the edge of the table should reach out just beyond the middle of the pail. To keep the pail in position a stick, *D E*, is placed in the pail, one end, *E*, being against the angle where the bottom of the pail joins its side. The stick must also touch the top edge of the pail, and its other end touches the stick *A B* at *D*, where a notch is cut to prevent it slipping. The pail is now perfectly balanced, and water may be poured into it until it is full.

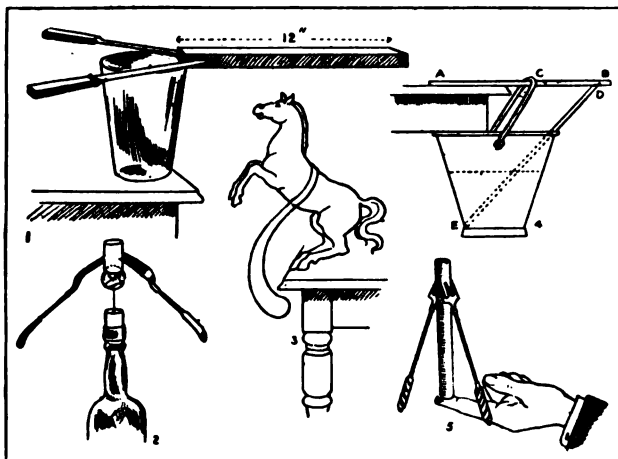
The explanation of all these balancing feats lies in the secret of the centre of gravity. The centre of gravity of a body is the point at which the whole weight of the body may be said to be collected, and if a body be supported at its centre of gravity it will keep perfectly balanced.

In the first experiment, for instance, the wood and two knives are, to all intents and purposes, one body, and the weight of the knives being

greater for their length than that of the wood, the centre of gravity of the whole is not midway between the end of the knives and the extreme end of the stick, but much nearer the knives. Hence the wood will balance perfectly, as shown. The experiment shown in picture 5 explains why it is very much easier for a man to carry two parcels weighing, say, fourteen

pounds each, one in each hand, than it is for him to carry one parcel of twenty-eight pounds in one hand. The two parcels of fourteen pounds, one on each side, balance one another, and the man is able to walk upright, which is the easiest position for walking. But when he carries the twenty-eight pounds in one hand all the weight is on that side, and it is necessary for the man to bend his body the other way, so that the centre of gravity of himself and the heavy parcel combined may be in a right position to keep him from falling.

A boy was once carrying a heavy parcel in his right hand, when the string broke and the parcel fell to the ground. At once the boy toppled over to the left. He had been leaning to the left owing to the weight on his right, but directly the parcel fell, the centre of gravity, which had been correct when there was a heavy weight on one side, was in the wrong position, and the boy, being top-heavy, fell over. We can see how this happened if we remove one of the forks in the experiment shown in picture 5, when the stick will at once fall over on the other side.



EXPERIMENTS THAT SHOW THE WONDERS OF BALANCE

# HOW TO FEEL THE PRESSURE OF THE AIR

THERE is a very simple scientific experiment by which the pressure of the atmosphere may be felt, and which will, at the same time, cause a great deal of surprise and wonder to those who perform or see the experiment for the first time.

We take a board measuring about two feet in length by four or five inches in width, and, say, a quarter of an inch in thickness. This we place upon a table, with about six inches projecting beyond the table, and cover it with an opened newspaper, as shown in the picture on this page, taking care to smooth the paper down all over so that it may lie as flat as possible on the table.

Now, clenching the hand, we bring it down with a sharp, hard blow upon the projecting wood. One who has never tried the experiment before naturally expects that the board will be knocked down off the table. But no matter how hard we may strike, the board will not go down.

The projecting end may be broken off, but the board itself cannot be moved. And yet, if we *press* slowly and gently upon the end with only one finger, the board can easily be pushed to the floor.

The explanation of the apparent mystery is to be found in the scientific fact of the pressure of the atmosphere. The air presses upon everything on the surface of the earth with a force equal to fifteen pounds on every square inch.

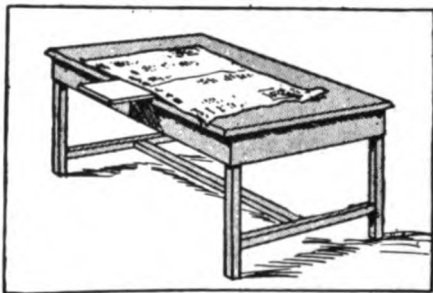
But this pressure is unnoticed by us in ordinary circumstances, because it works equally in all directions.

When, however, the pressure of the air is removed from one side of a body, it is felt with great force on the other side. It is this removal of the air-pressure from one side that happens when we strike the projecting board.

The blow is given sharply, and the air has no time to rush in between the table and the newspaper. The result is that the pressure of fifteen pounds to the square inch is ex-

erted in a downward direction only, upon the surface of the paper, and when we strike the end of the board this pressure is felt just as though the other end of the board were held down by heavy weights. It must, of course, be understood that the blow is to be short and sharp, the fist being removed from the board instantly. If the blow is a prolonged one, and the hand rests upon the

board for more than a moment, it will go down, because then we are doing practically the same thing as when we deliberately press upon the board. The air has no time to rush in under the board, and the pressure of the atmosphere then being the same both below and above the board, there is nothing to counteract our blow as is the case when we strike sharply and quickly, and the air-pressure is exerted on the top of the board only.



THE BOARD THAT WILL NOT MOVE

# CARDS THAT TELL ANY NUMBER THOUGHT OF

IF we take six visiting cards, or any other suitable pieces of card, and copy on to them the six sets of figures that are printed below—putting one set on each card—we shall be able, with the six cards that we have made, to tell any number that a friend may have thought of.

We ask the friend to think of a number, and then we show our six cards, desiring that he will point out on which of these cards the number thought of appears. In a moment we tell him the number, much to his astonishment.

The explanation is very simple. We merely add up the figures that appear on the top right-hand corners of the cards upon which his number appears, and the total that results is the number thought of. Thus, suppose that our friend thought of 47. It is on the first, second, third,

fourth, and sixth cards. The figures in the top right-hand corners of these are 1, 4, 8, 2, and 32, which, added together, make 47—the number thought of. We can guess people's ages in this way, and can get a great deal of fun and amusement from so simple a set of figure cards.

Some people know of figure cards by which a number can be guessed but these are usually arranged so that the top *left*-hand figures have to be added to give the solution, whereas here the *right*-hand numbers must be added. If any of our friends have seen figure-guessing cards

before, they will at once say that they can do the thought-reading as skilfully as ourselves. We let them try, and by adding up the *left*-hand figures they find that they are hopelessly wrong every time.

3	5	7	9	11	1
13	15	17	19	21	23
25	27	29	31	33	35
37	39	41	43	45	47
49	51	53	55	57	59

5	6	7	13	12	4
14	15	20	21	22	23
28	29	30	31	36	37
38	39	44	45	46	47
52	53	54	55	60	13

9	10	11	12	13	8
14	15	24	25	26	27
28	29	30	31	40	41
42	43	44	45	46	47
56	57	58	59	60	13

3	6	7	10	11	2
14	15	18	19	22	23
26	27	30	31	34	35
38	39	42	43	46	47
50	51	54	55	58	59

17	18	19	20	21	16
22	23	24	25	26	27
28	59	30	31	48	49
50	51	52	53	54	55
56	57	58	59	60	31

33	34	35	36	37	32
38	39	40	41	42	43
44	45	46	47	48	49
50	51	52	53	54	55
56	57	58	59	60	46

## VERSES MADE WITH FIGURES AND LETTERS

WRITERS of verses have shown a great deal of ingenuity in using for their rhymes words that can be expressed by figures or by single letters, which, when pronounced, give the sound, either exactly or almost exactly, of the words represented. A great deal of amusement may be obtained on a wet evening, when we have to remain indoors, by gathering a party round the table with pencils and paper, and seeing who can, in a given time, make up the best rhymes in this way. The examples given here will show how the letters and figures are worked into the lines. The first little poem is a very good specimen of the use of single letters as a substitute for actual words.

The Chinaman praiseth his T's,  
The mandarin praiseth his Q;  
The gardener praiseth his turnips and P's,  
But I praise U.

The mariner loveth the C's,  
The bagatelle-player his Q;  
The husbandman loveth his cattle and B's,  
But I love U.

The foolish have need of the Y's,  
The actor needeth his Q;  
The pilot hath need of two excellent I's,  
But I need U.

The hunter seeketh the J's,  
The shepherd seeketh his U;  
The college boys seek their final B.A.  
But I C Q.

Here is an example of verses in which double letters are used all through for the rhyming words. This is more difficult to arrange. The double Y, of course, stands for "Wise," and soon.

There is a farmer who is Y Y  
Enough to take his E E,  
And study Nature with his I I,  
And think of what he C C.

He hears the chatter of the J J,  
As they each other T T,  
And sees that when a tree D K K  
It makes a home for B B.

A yoke of oxen he will U U,  
With many whoas and G G,  
And their mistakes he will X Q Q  
When ploughing for his P P.

He little buys, but much he sells,  
And therefore little O O;  
And when he hoes his soil by spells,  
He also soils his hose.

This little poem has all the figures from one to ten, with the single exception of the figure 5, worked into it in a very clever way.

Astronomy is 1-derful,  
And interesting, 2  
The ear 3 volves around the sun  
Which makes a year 4 you.

The moon is dead and calm,  
By law of phy-6 great;  
It 7 where the stars alive  
Do nightly scintil-8.

If watchful Providence be-9  
With good in-10-tions fraught,  
Did not keep up its grand design,  
We soon should come to o.

Astronomy is 1-derful,  
But it's 2 mighty 4  
1 man 2 grasp, and that is why  
I'd better say no more.

Of course, in the third line of the second verse the "h" is omitted by writing "It 7" for "It's heaven."

Here is one of the nonsense rhymes called Limericks in which figures are very cleverly worked in to represent syllables.

There was an archbishop named T8,  
Who dined with a friend at 8.8;  
But, sad to relate,  
I'm unable to state  
What T8's t8-â-t8 8 at 8.8.

Another limerick in which the figure 8 is introduced in a very similar way is this.

They dined all alone at 8.8,  
On oysters they dined and 8 8;  
And he asked his dear K8  
To tell him his f8  
When they 8 t8-â-t8 at 8.8.

Here is another verse in which letters are used to take the place of a word.

A budding author, something new  
Submitting, signed himself X Q;  
The editor the paper read,  
And begged he might be X Q Z.

Another little verse was headed "UCIDK," and, after puzzling over this title for some time, the editor to whom it had been sent read the verse, which was as follows:

Surely, good sir, you follow me?  
It is as plain as A B C;  
Repeat it in a treble clef,  
For I am rather D E F.

The title was, of course, "You see I decay."

Perhaps one of the best poems in which letters are used for words is the following, which is entitled "A Maid of R K D."

A dainty maid of R K D  
Is F E in her bower;  
Smart as U C A honey-B;  
And sweet as N E flower.

Does she S A herself 2 please,  
X Q Q the little miss,  
She sings an L E G 2 T T,  
Or blows an M T kiss.

"B mine," I say, "U bonny J,  
B4 U R mine L (my knell);  
When U R gay, my hopes D K,  
In T-sing U X L."

Without ado she takes the Q,  
Her I I B9 and B D;  
"O, sir, I do not N V U,  
I C U R so need E."

"O F E, U I C R true,  
Y need I C Q less?  
I'll never D V 8 from U,  
But end my cares with 'S' (caress)."

# CURIOUS WAYS OF PEELING AN ORANGE

THERE are various ways of peeling an orange which give very artistic effects, and which can be done quite easily with a little practice. Perhaps the simplest of such methods of cutting the peel of an orange is that shown in picture 1.

With a sharp knife we cut a number of slits from the top to about two-thirds the distance down the orange, and then

gently and carefully pull away the peel all round from the white of the orange. We take the orange itself away, and open out the gores, or cuts, as shown in picture 2, and we have a water-lily.

If a night-light be put in the middle and be lighted, the effect is very pretty. A more elaborate way of cutting the peel of an orange gives the beautiful result shown in picture 5. First of all, we cut lines all round the orange as in picture 6; then on each side of these cuts, and about three-sixteenths of an inch away, we must cut other lines parallel to those already made, so that we now have the orange with a series of triple cuts as shown in picture 7. These cuts must now be joined up at the top and bottom of the orange in the manner shown in picture 8, and then across the middle, or equator, of the orange we cut the peel between the lines as is shown in picture 9.

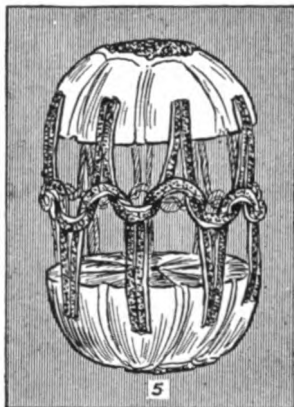


1, 2, the orange cut to make a water-lily; 3, 4, to make a rose-bowl

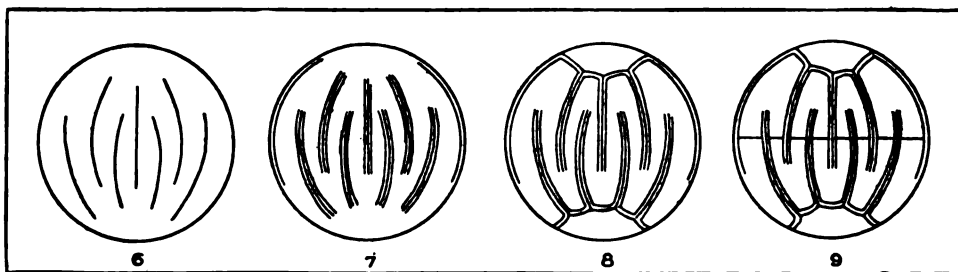
any of the ribbons. Great patience is necessary, but at last we get the figure shown in picture 5; and if we are careful we can remove the orange from inside, piece by piece, or, if we do not wish to do this, we can let it remain and wither

with the peel. Another artistic method of peeling an orange is to cut it as shown in picture 3, and then to pull back the peel

carefully and release the orange so that we get two cups of the form which we see in picture 4. In cutting and peeling oranges in these fancy ways, one or two points must be remembered and carefully observed. First of all, in choosing our orange we should select a large one, not over-ripe and not under-ripe. It should have a smooth skin, not too thick, and without blemishes. Then for the cutting we must have a really sharp knife with a fine point, and in cutting we must not cut too deeply. The cuts should be clean, so that there are no jagged edges to the ribbons, and great care should be exercised so that we may not cut across places or lines that should not be cut. If we cut wrongly in making the design of picture 5, the whole scheme of cutting will be spoilt, and the peel will not fall into the proper loopings as they are shown in the picture. But with a little care and



5. An artistically peeled orange



The different stages of cutting the peel of an orange to produce the artistic effect shown in picture 5

All is now ready, and with a small, blunt pen-knife we gently raise the peel everywhere from the body of the orange, taking care not to break

patience any clever boy or girl can become quite expert in fancy orange peeling, and will soon be able to invent new and artistic designs.

## A FILTER THAT A BOY CAN MAKE

IT is always well to filter our drinking-water, especially if we live in the country, and there is a very simple form of filter that any boy or girl can make with little trouble. We take an ordinary garden flower-pot eight or nine inches in diameter at the top, and after thoroughly washing it we stop the hole with a piece of sponge, which must not fit too tightly. Then we put in a layer of charcoal, about two inches deep, and above this a layer of

clean sand, with a layer of clean, coarse gravel three inches thick on top. The filter is now quite ready for use. We fix it up over a vessel of some kind, and let the water which we want filtered run through the various layers in the flower-pot. Of course, from time to time the filter wants cleaning out thoroughly, but this is done quite easily, and we shall find that, simple as is this little apparatus, we have a thoroughly effective and serviceable filter.

# HOW TO MAKE A MOVING PANORAMA SHOW

A MOVING panorama show with a constant appearance of fresh pictures and fresh scenes is always an attractive toy, and with patience and care may be made by any industrious boy. First of all we need the body of the show, and for this an old cigar-box will do very well—the kind of box that holds 100 cigars.

Let the open end—that is, the original top of the box—be the front of our show. On the bottom, as shown at A and B in picture 1, we nail or screw two pieces of wood to serve as feet. Now, in the top of the box at the places C, D, and in the bottom at the corresponding points E and F, we make two neat round holes. They should be in the middle of the width of the box, and about 1½ inches from each end. Next we must prepare the rollers for the panorama.

These are to fit into the holes on each side of our show, and they must be two round pieces of wood, rather thicker than a blacklead pencil. They should be long enough to project half an inch above the holes C and D, and half an inch below E and F. At the top of each of these rollers we cut a square end, as shown in picture 2; then we make a handle, as in picture 3, to fit on to this square end. The little piece of wood A is to fit on to the end B when the handle is fixed on the square end of the rollers, as may be seen in picture 4.

We now prepare the front of our stage by draping it in some way with curtains, and here there is plenty of scope for artistic taste. The width of panorama showing at one time should be about four inches in the middle of the show, so that we drape the sides accordingly, taking care that the rollers on which the panorama works, are quite hidden from the front. The drapery of the show may be in actual silk or velvet, or it may be painted on cardboard, according to our opportunities, skill, and taste.

The next thing is to prepare the panorama, and here again a great deal depends upon our ability and skill in drawing and painting.

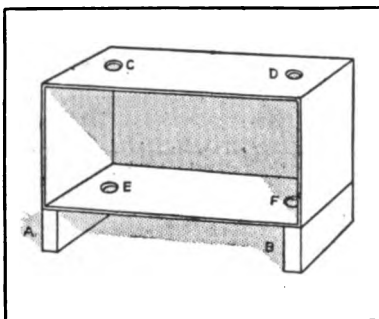
We may select any subject—Robinson Crusoe, scenes from the Arabian Nights, Jack and the Bean Stalk, Cinderella, and so on; or we may like to draw a procession. The paper on

which the panorama is drawn should be in one long piece, not too stiff, to roll easily round the rollers, and not so soft that it will tear easily. It should be about four inches wide, but if it is difficult to get that width we may have it narrower, provided we bind something round the rollers above and below where the paper winds on, in order that the panorama may wind evenly round the middle of the rollers.

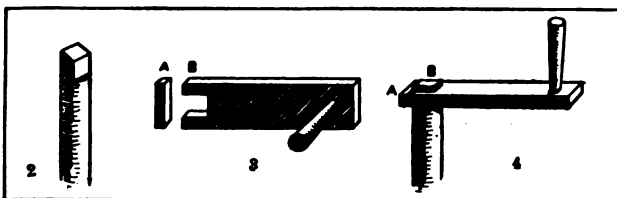
In using a narrow paper we must, of course, adapt our stage scenery and drapery to hide the top and bottom of the roll of paper as it moves across the show. We have said that a very great deal depends upon the skill of the artist in preparing his panorama. But even those who cannot draw at all may make an interesting panorama by cutting out from illustrated papers the figures of men and animals and so on, and pasting these carefully on the roll of paper as required. Of course, they must be cut from pictures printed on fairly thin paper, or the roll will get too clumsy to wind easily. It will take some time, too, to make a panorama in this way, as we cannot at once get exactly the figures we require to make up our scenes. Of course, we can make up a story if we like; and then there is plenty of scope for cleverness in fitting together the figures and objects we are able to cut from pictures in the illustrated papers.

When the roll is quite prepared, we put our rollers through the holes at the top of the show and into the holes at the bottom. Then we fasten one end to one roller with glue, taking care that the pictures are on the side seen through the opening of the show. When the glue is quite dry, we turn the handle and roll the paper round the roller, until there is just sufficient left unrolled to glue the other end to the other roller. When this is dry, the panorama is quite complete and ready to show.

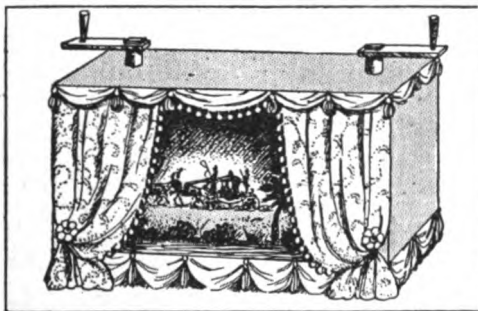
We can then give an entertainment to our friends, getting our brother or some other friend to turn the rollers as we give directions, while we stand in front and tell the story of the pictures as they pass across the stage. The interest of the entertainment depends on how the story is told.



1. The framework of the stage



2. Squared end of roller; 3. Crown piece; 4. Handle finished for use



5. The panorama as it appears when completed

The next thing is to prepare the panorama, and here again a great deal depends upon our ability and skill in drawing and painting. We may select any subject—Robinson Crusoe, scenes from the Arabian Nights, Jack and the Bean Stalk, Cinderella, and so on; or we may like to draw a procession. The paper on

which the panorama is drawn should be in one long piece, not too stiff, to roll easily round the rollers, and not so soft that it will tear easily. It should be about four inches wide, but if it is difficult to get that width we may have it narrower, provided we bind something round the rollers above and below where the paper winds on, in order that the panorama may wind evenly round the middle of the rollers.



## AN EASILY MADE WEATHER-VANE

EVERY clever boy can erect a weather-vane in his garden with very little trouble and at scarcely any expense. We obtain a fairly stout pole or post, straight, but whether square or round in shape does not matter at all. We

then screw on to the post, at right angles to each other near the top, four iron right angles such as can be bought at any hardware store for a few cents. These are to indicate the four points of the compass. With a fretsaw we cut out four wooden letters, N., S., E., and W., with an arm underneath each as shown in picture 1. This arm is, in each case, to insert into the screw-hole that is always found in the iron angles that we buy at the hardware store. We must therefore have the arm wide enough to fit tightly into the hole of the iron angle. It can be kept perfectly firm in the hole by inserting a piece of wood on each side of it in the hole. Now we must make a hole in the top of the post, and firmly insert an iron rod about a quarter of an inch in diameter. This rod should be roughly pointed at both ends, and could be obtained from a blacksmith. The pole is now ready, and should be erected in the garden at a spot that is open to the winds from all directions. A sheltered spot is quite useless for a weather-vane. In erecting the post we should dig a hole about 3 feet deep, insert the post, and then fill in the earth, pressing it down tightly. On the ground immediately round

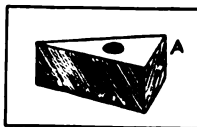
the post, we should stamp in some gravel, as this will help to tighten the hold of the earth on the post. If we want additional security in fixing up our post, we can, of course, get some cement from a builder and mix this with water, placing

the wet cement in the hole all round the post. When it dries, the cement will hold the post very firmly. Now we make the weather-vane itself.

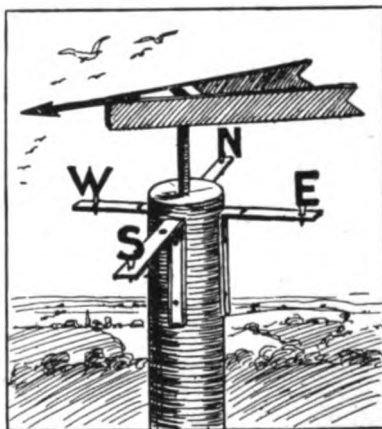
We take a wedge-shaped piece of wood as shown in picture 2, and bore a hole right through it of a diameter large enough for it to turn quite easily and smoothly on the iron rod at the top of the post. Then we nail across this hole at the top of the wedge a piece of sheet-iron, so that, when the wedge is slipped on the iron rod at the top of the post, the rod will not go right through. On each side of the wedge we screw a piece of quarter-inch board, 4 inches wide by 20 inches long, as in picture 4, and where they meet at the point A join them nicely; and bevel to a sharp angle. A metal or wooden arrow may be cut or sawn out and screwed on to the vane to act as the pointer B. We lift the vane on to the rod at the top of the post, fitting the rod into the hole in the wedge, and our weather-vane is quite complete and ready for use. Of course, in erecting the post in the garden we must see to it that the N., S., E., and W. point actually to these different points of the compass. A small pocket-compass, costing a nickel, may be used to guide us in doing this quite correctly.



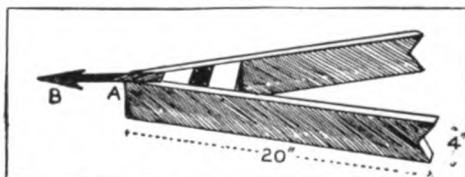
1. THE LETTERS



2. THE WEDGE



3. THE WEATHER-VANE IN POSITION



4. THE WEATHER-VANE READY FOR THE POST

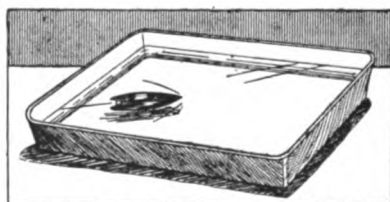
## A LITTLE BOAT THAT MOVES IN THE WATER

IT is easy to make a simple little boat that will move along in the water without mechanical appliances of any kind. We cut out of a thin piece of tinfoil a shape something like a boat, about two inches in length, with a triangular nick at the end. The tinfoil must, of course, be very thin. Then we place this gently on the surface of the water so that it will float.

Now let us take a piece of camphor, such as can be bought at any chemist's shop for a penny, and from this cut off with a penknife a little piece about

the size of a small pea. We place this upon the end of the tinfoil boat at the angle of the nick, so that while resting on the boat it also just touches the water.

In a moment or two the boat will begin to move, and will continue to do so as long as the camphor touches the water. By cutting the tinfoil a little curved or like a horseshoe in shape we shall have a boat that will travel round and round in a circular dish or basin. A skilful boy will be able, with a small piece of very thin wire and a fragment of tissue-paper, to erect a mast in the boat, with a flag at the top of the mast.

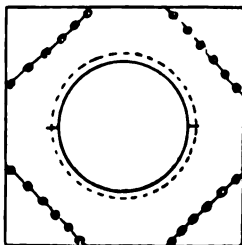


THE LITTLE BOAT DRIVEN BY CAMPHOR

## A PRETTY NEEDLEWORK BAG

A PRETTY little bag to hold fancywork can be made in a very short time by any girl who understands something of plain needlework. The larger we want the bag, the more silk is required, of course; everything depends upon the size of the work it has to hold. But if we remember that, whatever the width, the length must be just double, we shall find we shall not go far wrong. Now, having found

an oblong piece of material, twice as long as it is broad, we fold it in half, and with a pair of compasses, or a saucer, draw a round on one half, and cut it out, as shown in picture 1. Then we turn the folded material on the wrong side, and sew the sides together.



1. THE OPENING

We turn it to the right side again, and the bag will now be a flat piece of double material. Now our stuff is getting to look more like a bag, although it is not nearly finished. The next thing to do is to turn our attention to the round hole, which is still raw-edged. As we cannot turn in a hem here, a false piece must be put on; so we cut a little strip of the same material, large enough to go round the hole, but making it a little too big, to allow for the turn where it is joined. We sew this round the hole, putting the two right sides of the material together. When this is done, and

the ends are joined together to make it neat, we turn the false piece over and hem it down on the other side. All the plain sewing part of the bag is now finished, but the part that really "makes" the bag is yet to come.

Across each corner we draw a line, being careful to draw all four alike, and work French knots along each line, sewing right through the two pieces of stuff. To make French knots,



2. THE BAG COMPLETE

we twist the silk—for we must not use cotton—round the needle several times, and put the needle in where we wish it to go, pulling the silk through until the silk on the right side of the bag sets in a little lump. If this is our first attempt, we may find that we pull the silk right through, but if we pull slowly a little practice will soon put us right. When we have worked all the lines with French knots, as shown in picture 1, we must run a cord through the little false hem. We cut two little slits on opposite sides of the round hole, and work them in buttonhole-stitch—with silk, not cotton—then we run the cord or ribbon through, and the bag is finished. Little silk tassels sewn to each corner make a pretty finish.

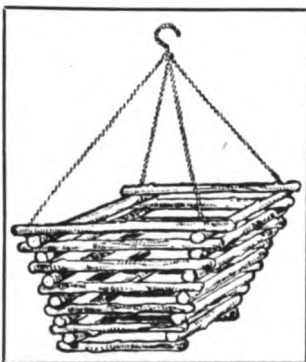
If the bag is made of thick cream silk, with the French knots, buttonhole-stitch, and cord or ribbon of primrose, the effect is charming.

## A FERN BASKET FOR A NICKEL

FOR an expenditure of five cents, and with very little trouble, any intelligent boy can make a pretty fern basket. Let us go out into the woods and collect some oak branches about three-quarters of an inch thick, and varying in length from six inches to twelve inches. We shall require between thirty and forty pieces altogether for our purpose.

When we take these home, we must score down the bark from end to end of the sticks, and then, having put them in a pail, we pour boiling water on them. The effect of the scalding will be to strip off the bark, leaving us nothing but the bare sticks, which are just what we want for our purpose.

Besides the sticks which we have collected, all the material we require is a little copper or brass wire, which we can purchase for five cents. Copper or brass wire is better than iron wire, because iron wire would rust through and waste away. It will be seen that the basket



THE BASKET READY FOR USE

tapers from about twelve inches square at the top to about six inches square at the bottom. Of course, we need not keep to these sizes; we can make the basket four inches at the bottom and eight inches at the top, or any other size that we find convenient.

We may colour the sticks by putting them into water in which we have put a small amount of permanganate of potash or of logwood.

The former will dye the sticks brown, and the latter will dye them an artistic purple. We require to make holes at the ends of our oak sticks. In doing so we must be careful not to split the wood. To make the holes, which must be slanting, we should use a gimlet, but if we cannot make the holes without splitting the sticks, we can use a red-hot wire for the

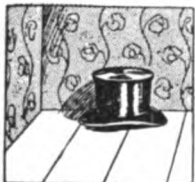
purpose, heating it again whenever it gets cool. The latter process is slow and tedious, and we should not adopt it unless we are compelled to do so. Then we thread the wires through the holes, as seen in the picture. The wires are twisted together at the top ends, from which our fern basket hangs. We may, if we like, varnish the basket after we have made it. Across the bottom we should put one or two cross sticks, so as to do away with the wide opening. Then we line the bottom and all four sides with green moss, which we can procure for ourselves in the woods. Having done so, we put a layer of stones

and gravel in the bottom and fill up the basket with good earth, in which we place the fern. When we wish to water the fern, we ought not to pour water on top of the basket. We should take it down and dip the entire basket in water, letting it remain for half an hour. Rain or pond water is best, but tap water will do if we cannot easily get either of these.

# HINTS AND TRICKS FOR ODD MOMENTS

## HOW HIGH IS THE HAT?

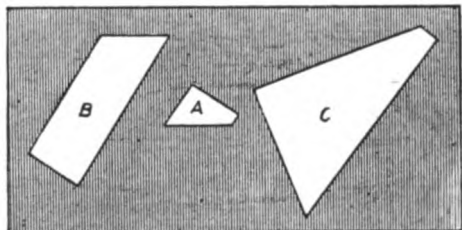
OUR eyes play us many tricks, and they often deceive us as to the size or height of anything. The apparent height of a hat, for instance, may be very much greater, or it may be less, than it really is. There is an interesting



experiment by which we may prove this to ourselves. We should place some mark on a wall to show how high up we think the top of a tall silk hat will come when the hat is stood on the floor against the wall. It seems a very simple and easy thing to give a fairly accurate estimate, but we shall probably be hopelessly out. Let us mark the estimated height first, and then see how accurate we are, by placing the hat against the wall, as shown in the picture. It will spoil the amusement and stop the surprise if we say here whether the estimate is likely to be greater or less than the real height.

## TO FORM A SQUARE

CUR out ten pieces of card—two of the size and shape of A, four of B, and four of C—and then arrange them in such a way that they will form a perfect square. When they are jumbled up it seems impossible that they could be made



into a square, and when we try to put them together it seems equally impossible; but with perseverance we shall probably be successful. If we are not, and the task is beyond us, we can turn to the solution which is given in the next Little Book of Entertainment.

## A WHIRLPOOL IN A TUMBLER

IF we fill a tumbler with water and throw upon the surface some thin shavings of camphor, these will instantly begin to move about



and give the appearance of a miniature whirlpool, the movement continuing for some time. But if we now dip into the water anything that is greasy—as, for instance, the end of a pencil that has been rubbed with oil—the particles of camphor will dart to the sides of the glass, and the motions will cease immediately.

## A GOAT MADE FROM A PEAR

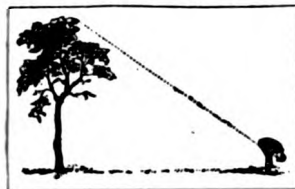
HERE is a picture of a goat made up from a pear with the aid of four matches, an almond, and some raisin-stalks. We stick the matches into the pear as shown, then we get a well-shaped almond from its shell to form the head, and into this we stick curved

raisin-stalks for horns, two or three stalks for a beard, two short pieces of stalk for ears, and the whole is fixed to the end of the pear by means of a stalk or piece of match, thus forming the neck of the goat. A hole is cut on each side of the almond for the eyes. With a little ingenuity and practice we can make other animals from the different kinds of fruit.



## CURIOUS WAY OF MEASURING A TREE

SOME of the natives of South America have a curious way of measuring the height of a tree or tower. They turn their backs to the tree, and walk away from it until they come to a



spot where, keeping their backs to the tree, they can, by stooping down and looking between their legs, see the top of the tree. Then they make

a mark on the ground, and the distance from this mark to the base of the tree is, roughly, the height of the tree. Any boy can thus tell within an inch or two the height of a tree or building.

## WRITING WITH INK ON WOOD

IF we have ever tried to write with pen and ink upon ordinary wood, we know how difficult it is. Directly we have written the words the ink begins to run, and if our pen has been well filled the words become, in a few moments, a mere blur, no matter how well they may have been written. To avoid this running of the ink, there is a very simple precaution which we can take, and that is to rub the wood with powdered resin, when we shall be able to write upon it with ink quite easily and well.

## A SIMPLE WAY TO DRAW A COW

HERE is a simple way of drawing a cow. We begin by making a rough pencil outline of the shape of the cow, as in the first picture, getting the proportions correct. Then we begin to fill in the details of the animal, as in the second picture, and it will be found that the rough outline first drawn is a great help in making our sketch. When we have the cow pencilled in completely, we ink over the lines that are to remain, then rub out the pencil-marks, including the original framework, and if we have done our work well we have a drawing something like the third picture here.



## THE MYSTERIOUS JACOB'S LADDER

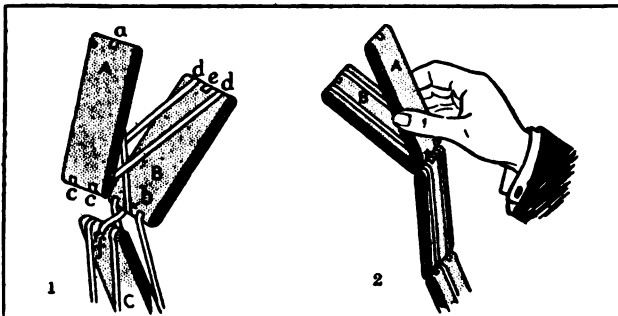
A VERY old puzzle, which is easily made, is that known as the Jacob's ladder. It consists of an ingenious arrangement of little pieces of wood and tape, so fastened together that by holding the top piece of wood and alternately inverting it and bringing it back to its original position, another of the pieces of wood is apparently constantly falling from the top to the bottom of the ladder.

To make one of these clever little toys, we first of all get some suitable wood from which to cut the pieces we need, and for this purpose nothing better could be obtained than an ordinary cigar-box. We decide how many steps our Jacob's ladder shall have, and although it may consist of any number, great or small, an average number is ten. A greater number becomes rather unmanageable.

The pieces of wood must all be of exactly the same size—say,  $3\frac{1}{2}$  inches by 2 inches; and when they are cut out with a fretsaw they should be nicely smoothed, and the top and bottom angles rounded slightly by rubbing with sandpaper.

Ordinary white or pink or black tape about  $\frac{1}{4}$  or  $\frac{1}{2}$  an inch wide is used for joining the pieces of wood, and the method of fitting them to the wood is shown in picture 1. Each piece

of wood has three tapes, and all the tapes should be of the same length—about 5 inches—so that the ends can just pass round with enough length to glue down on the wood as seen in the picture. There is a centre tape and side tapes for each piece of wood, and the arrangement is the same in each case, however many steps the Jacob's ladder may have. The centre tape *a* on the board *A* is fastened on the far side of the board *B* at *b*. The side



THE METHOD OF FIXING THE TAPES & HOW TO WORK THE LADDER

tapes *c c* on *A* are fastened on the other side of *B* at *d d*, while the middle tape *e* on the board *B* passes on to the board *C*, and is fastened at *f*, and so on throughout the entire length of the ladder. When all the tapes have been glued, we hold the top little

board *A* as in picture 2, and *B* seems to fall to the bottom; then we invert *A*, and again the board next to it seems to fall to the bottom. *A* is returned to its original position, and the board drops again, and so on without end. The whole thing is a clever optical illusion. This toy is said to have been invented in Japan many hundreds, if not thousands, of years ago, and hundreds of thousands of Jacob's ladders are sent from Japan every year for sale in the cities and towns of Europe and America.

## THE DANCING DWARF ILLUSION

AN excellent illusion that will give a great deal of amusement at an evening party is that of the dancing dwarf. Very little is needed in the way of apparatus, but two performers are required to carry out the deception, and if a third person can be enlisted to assist in the arrangements, all the better.

The best place to perform the trick is in the opening between two rooms that are separated by folding doors. Curtains usually hang here, and they are needed for the performance. The doors are thrown back and a table is placed just in front of the curtains. This table must have drapery hanging to the floor, like a dressing-table. Another curtain is hung between the audience and this table to hide the table until the performers are ready.

Now to prepare the dwarf. The taller of the two performers disguises his face with a wig, false whiskers, and burnt cork; and he pulls over his hands and arms a pair of stockings, of some bright colour if possible, and puts his hands into a pair of shoes, ornamented with buckles or large bows. The shorter of the two performers now stands behind the other, and thrusts his arms forward under his companion's armpits; and a tunic, that must be specially made for the purpose, is placed in position, being fastened round the neck of the tall performer, while the arms of his short companion are passed through the sleeves of the tunic. The shoe-clad hands of the tall partner are

placed upon the table and represent the feet of the dwarf. Their owner bends forward, and the curtains are securely fastened above his head and are pulled close to the tunic at his sides, so that nothing will be seen by the audience but the disguised head, the stockinged arms and hands, which appear to be legs, and the arms and hands of the second partner, which really seem to belong to the owner of the head and legs. The whole presents the appearance of a dwarf with a very large and grotesque head.

All is now ready, and the third partner goes in front, and, addressing the audience, says he is going to introduce to them Prince Ponatowski, the wonderful Polish dwarf, or he uses some similar name. He then removes the front curtain, and there is the dwarf, who, if the preliminaries have been arranged with care, presents a wonderfully realistic appearance.

The showman must, of course, talk to the audience about the wonders of the dwarf, during which time the dwarf looks about, blinks his eyes, moves his hands, and shifts his legs from one position to another. With a little practice it is possible for the dwarf to play a whistle, but this needs care, as the whistle has to be held in the hands of the short performer, who is behind the curtain and cannot see, while it is placed to the mouth of the taller performer. It is, of course, important that the one who does the head and legs part shall not use his hands as hands, or the illusion will be spoilt.

## AMUSEMENT WITH STOPS AND COMMAS

THE little commas and full-stops, and other similar signs that we see scattered about this page, and the pages of all the books that we read, do not seem very important. Yet, without these, it would very often be quite impossible for us to know what a writer meant.

Some sentences and paragraphs, indeed, can be made to have two exactly opposite meanings, according to how the stops are put in, and a good deal of amusement can be got if a few friends sit round a table, each having before him a paper and pencil, and try to punctuate correctly some of these rather difficult sentences. The sentences and verses given on this page may be used for this purpose.

### SENTENCES THAT NEED STOPS

Here is a very startling statement :

King Charles the First walked and talked half an hour after his head was cut off.

We might doubt the accuracy of this, but when we know that there should be a semicolon after *talked*, and a comma following the word *after*, then the meaning is quite plain :

King Charles the First walked and talked ; half an hour after, his head was cut off.

Many of us know the little rhyme :

Every lady in this land  
Has twenty nails upon each hand  
Five and twenty on hands and feet  
All this is true without deceit.

We wonder how it can be true, till it is properly punctuated in this way :

Every lady in this land  
Has twenty nails ; upon each hand  
Five, and twenty on hands and feet.  
All this is true without deceit.

Here is a sentence that makes perfect sense when the stops are put in, but it looks now very much like a mere jumble of words :

That that that is is that that is not is not that that that is not is not that that is is not that so.

It should be punctuated in this way, and the words in italics should be emphasised :

That *that* that is, is *that* that is not, is not ; that *that* that is not, is not *that* that is, is. Is not that so ?

When a gentleman made the remark to his friend, "Time flies you cannot they pass too quickly" he was not talking about the passing of time, but about the timing of flies. A semicolon after *cannot* makes the sentence clear.

### THE INSPECTOR AND THE MAYOR

A Prussian school-inspector called one day upon the burgomaster, or mayor, of a small town, and asked him to come on a tour of inspection of the schools in the district. The burgomaster was not anxious to go, and the inspector heard him mutter to himself : "What is this donkey here for again ?" At the first school, the inspector said he would like to examine the children in punctuation. "Oh, bother that !" said the burgomaster, anxious to get on to the next school. "What do commas and such trifles matter ?" But the inspector insisted, and, writing a sentence on the board, he asked a boy to read it, which the lad did as follows : "The burgomaster says the inspector is a donkey." Then, putting commas after the words *burgomaster* and *inspector*, he asked another boy to read the sentence, thus : "The burgomaster, says the inspector, is a donkey."

In this rhyme, to make sense, a semicolon should be placed after the first noun in every line except the last of each verse ;

I saw a peacock with a fiery tail  
I saw a blazing comet pouring down hail  
I saw a cloud all wrapt with ivy round  
I saw a lofty oak creeping on the ground  
I saw a beetle swallowing up a whale  
I saw a foaming sea brimful of ale  
I saw a pewter cup sixteen feet deep  
I saw a well full of men's tears that weep  
I saw wet eyes in flames of living fire  
I saw a house as high as the moon and higher  
I saw the glorious sun at deep midnight  
I saw the man who saw this wondrous sight.

I saw a pack of cards gnawing a bone  
I saw a dog seated on Britain's throne  
I saw King Edward shut up in a box  
I saw an orange driving a fat ox  
I saw a butcher not a fortnight old  
I saw a greatcoat all of solid gold  
I saw two buttons telling of their dreams  
I saw my friends who wished I'd quit these themes.

Some years ago a London news agency received a cablegram from its correspondent in Australia which read as follows :

"Influenza extensively prevalent Wales Victoria numerous deaths Bishop Adelaide found dead sea-serpent sixty feet Coffin Bay."

This was published in the newspapers as three separate items of news to the effect that influenza was very prevalent in New South Wales and Victoria ; that the Bishop of Adelaide had been found dead ; and that a great sea-serpent, sixty feet in length, had been seen in Coffin Bay.

As a matter of fact, the bishop was not dead, and it was he who was supposed to have found the remains of a dead sea-serpent lying on the beach at Coffin Bay sixty feet long.

### STOPS THAT COST MONEY

Some years ago, the blunder of an American clerk, in putting a comma in the place of a hyphen, cost the United States nearly \$2,500,000. A duty was to be put on certain goods going into the country, and among those to be allowed in free, were "all foreign fruit-plants," meaning young fruit-trees for planting. In copying this part of the Bill for Congress, the clerk made it read : "all foreign fruit, plants," and so on. The result was that for a year, until Congress could set the mistake right, all kinds of fruit were allowed into the United States free of duty.

A wealthy Frenchman died, and by his will left a large sum of money to his two nephews. Each expected to receive *two* hundred thousand francs, but the executors said they were entitled to only *one* hundred thousand. The nephews pointed to a sentence in the will which read like this : "A chacun deux cent mille francs," meaning, "To each two hundred thousand francs" ; but the executors pointed to a small apostrophe between the *d* and the *eux* of *deux*, thus making the sentence read : "A chacun d'eux cent mille francs," which means, "To each of them a hundred thousand francs." The executors, however, had to pay the nephews two hundred thousand francs each, the law court having decided that the mark was a tiny smudge, and not an apostrophe.





THE MAGNIFICENT PANORAMA OF THE ALPS AS SEEN FROM MURREN

## AMONG THE SNOW-CAPPED ALPS

### A FAMILY TOUR IN SWITZERLAND

CONTINUED FROM PAGE 5505

OUR first united Swiss holiday was long under discussion. For months, maps and guide-books have been pored over with a view to making schemes of tours, and the chief topic of thought and conversation have been the heaviness and fit of our boots, the lightness of our waterproofs and luggage, the suitability of various sorts of hats to stand rain and wind, as well as shade the eyes from too much sun. Other preparations have been extra vigour in our regular Swedish exercises and deep breathings, a handful of salt in our baths, and steady walking on every possible opportunity, especially up hills. At last we are off, all very fit and everything complete.

We are a merry party at breakfast next morning at Berne, in spite of a Channel crossing and a long night journey across the plains of France. Our spirits began to revive when the wide, sad plains—so inexpressibly lovely in the misty grey dawn—gave way to the uplifting hills of the Jura country ushering us into Switzerland. As we watch the hastening rivers and the fleeting woods and valleys—foretastes of delights to come—we feel that the real starting-point of our long-talked-of, long-prepared-for tour is at hand.

After-breakfast we find a shop where we can buy iron-pointed walking-sticks

and the brown waterproof knapsacks with pockets, that fit so comfortably to the shoulders with straps. This done, we long more than ever to be off, but Berne holds us. How interesting are the shop arcades, the beautiful fountains, the famous bears in their pit, eating oranges so neatly, bathing in their pond with absurd antics! Such high bridges as those over the swiftly flowing Aar, ever so far below, we have never seen.

The sun is shining, and we have no eyes for anything but the views from the bridges, from the grand terrace on which the cathedral stands boldly out over a hundred feet above the river, from the Schänzli, a hill close by, where we have our first out-of-door meal.

But the view! It is our first sight of the distant glittering white mountains, which seem to us, as we gaze, a sort of link between earth and heaven, rising from the lower hills, such as those we already know, to mingle with the clouds of the sky above. A mighty company of giants they look, these chief peaks of the Bernese Oberland, or Highland, and as we sit on, making out the Jungfrau and her neighbours, and other groups, unable to tear ourselves away, a beautiful rosy flush spreads over their unearthly whiteness; it is the sun's good-night kiss. And then we begin to feel tired, and gladly take

the tram home to supper and to our delightfully comfortable Swiss beds.

Eager as we are to be off in the morning, we feel that we must wait a few hours to go to the Natural History Museum to see the relief map of the Bernese Oberland and compare it with our flat ones, tracing on it the valleys and passes we have planned to see, meaning to go on foot as much as possible. We take, too, a hurried glance at the beautiful crystals from St. Gothard, and at the animals of Switzerland, past and present. And then we rush

we think of Jack climbing the beanstalk and the wonderful country he found at the top as we step out of the station and start walking along the road cut out of the Beatenberg Slopes.

There are woods rising on the left, woods and fields sinking downwards to the lake on the right. The long village of St. Beatenberg straggles along this road for two or three miles, with large hotels, and little shops full of carved bears and other Swiss articles. On and on we go, past the last big hotel, and then up a bit more hill, till we are



THIS PICTURE MAP SHOWS THE ROUTE OF THE HOLIDAY IN SWITZERLAND

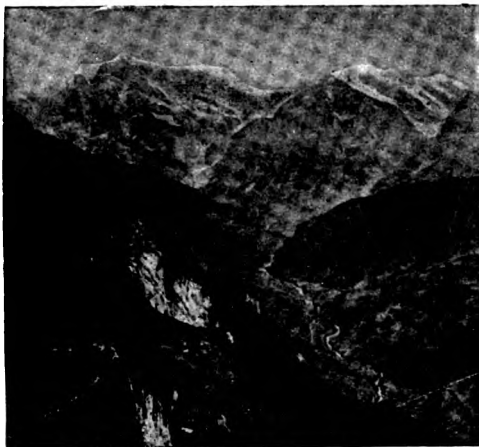
for the train to Thun, knapsacks on backs, packed with necessities for the night, having sent on in advance all the luggage we cannot carry. All the time in the train the wonderful mountains come closer and closer, and when we take the steamer on Lake Thun new beauties are unveiled at every turn as we seem to pass almost under their shadow.

Too soon comes the little pier at which we are to land, and from which a mountain railway takes us up a very steep mile. Every moment the view becomes grander and grander. Somehow,

nearly a thousand feet higher than the village, and have arrived at Amisbühl.

All our lives we can never forget our week at Amisbühl. From the deep verandah, where we can have all our meals if we like, we look right across Interlaken—the town “between the lakes” of Thun and Brienz—to the glorious mountains that have seemed to call us on all the way from Bern. We can study them from our grand point of view at every hour of the day, in all sorts of weather, and find them always changing in colour and beauty.

# THE GLORY OF THE ALPINE HEIGHTS



(1) GRINDELWALD VALLEY AND THE WETTERHORN



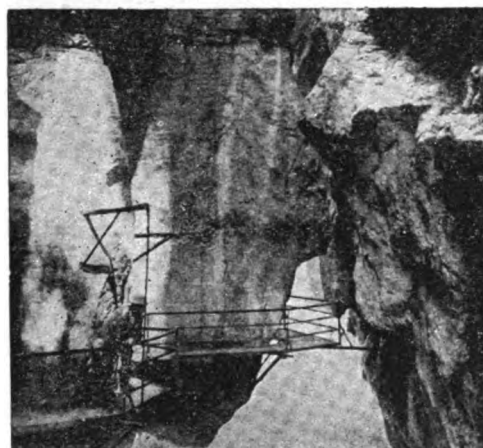
(2) GOATS ON THE ALPINE SUMMITS



(1) CLIMBING A DIFFICULT PEAK



(2) CROSSING A DEEP CREVASSE



(1) A CRAGGY ROAD OVER THE RIVER AAR



(2) A ROAD THROUGH THE ROCK NEAR LUCERNE

These pictures give some idea of the grandeur and variety of the scenery in the Alps. The glory of the snowy peaks, the indescribable beauty of the fertile valleys as seen from the lofty heights, the paths and roads over and under and through the solid rocks, are sights never to be forgotten by the traveller who has ever seen them.

The photographs on these pages are copyrighted by Underwood & Underwood, N. Y. (1), and the H. C. White Co. (2).

With the telescope we can see climbers like black specks, and many details of the rocks, snow, and ice that make up a snow landscape. The grandeur of it all in a thorough good storm of thunder and lightning makes us breathless. Never have we heard such thunder as this, echoing as it is tossed back from mountain to mountain; never has lightning revealed to us such desolation for such brilliant moments. And sometimes, when the mists cover the lake and the town far below, and the valley beyond, we wonder if they can really be there, for we can see nothing below the grey sea of mist.

Then, while we are still bewildered, the scene suddenly changes. All below lies in golden sunshine and bright colour, and the mists have rolled up and entirely hidden the many mountain-tops.

We get into the habit of waking early to watch from our windows the glories of the sunrise. Each day of our stay we take beautiful walks up the hills, and soon succeed in getting up the slippery grass slopes, for we have nails in our boots, to see over the ridge to the next valley beyond. Charming white goats come and play with us, and share the salt we have to eat with our hard-boiled eggs; and we get milk in the chalets of the high pastures on which the beautiful brown cows wander, the loud bells fastened round their necks jangling in every variety of notes. And all too soon the day comes for us to shoulder our knapsacks, having posted our portmanteaus on to Mürren, and find our way past the haymakers—they always seem to be making hay in Switzerland—and the barns, and the

chalets, down and down through the woods for three thousand feet to the lake, and the town between the lakes.

Some of us would fain linger in the town, for the shops are most tempting; but we push on by train up the valley we have looked at so often from Amisbühl, to Lauterbrunnen, mounting all the time, and enjoying the hurrying, foaming river which runs down beside the line, and the changing views of the snow giants, who now seem close upon us. We might take the cable railway up to Mürren, but we decide to do the climb, which we thoroughly enjoy, for there are little leaping rivers to cross, besides all the delights of shady, mossy paths, and wild strawberries. When we emerge, somewhat tired and heated, on the plateau on which Mürren stands, we feel overwhelmed by the nearness and immensity of the mountains, divided from us by a narrow, deep valley. What a glow there is that evening upon them, everyone rushing out from dinner to enjoy the sight for the few minutes that it lasts! And from our window we see the goats come



THE ANCIENT CITY OF THUN  
Copyright by Underwood & Underwood, N. Y.



ON THE LAKE OF LUCERNE  
Copyright by H. C. White Co.

down the lane from the mountains to sleep in the village; we hear their bells in the morning when they start, soon after the glorious sunrise. We spend some days at Mürren, two as wet as wet can be, no view, no fires, no little girls and their mothers at every corner making lace for tourists to buy; but we read up our route, write our letters, and on fine days enjoy our walks all the more for a rest. Such walks! Each day we think we have found a more beautiful one than the last. But the unforgettable one is to the Schilthorn, our first big climb. We go on, up and up, till we come to a dreary valley, all rocks and

snow, which we are delighted to cross, even if we do sink in over our boots, when the sun is on it; and then imagine coming upon a field one blaze of blue, dark blue gentian, pale blue forget-me-nots, and below it a blue, blue lake, and above, over all, the bluest of skies. We have a fine scramble back, tobogganning part of the way, and much enjoy crossing a wide and dashing river on stepping-stones.

Then comes another glorious walk. Leaving Mürren early in the morning, packs on back, luggage posted to Nieder Rickenbach, we take the road for four or five days. We quickly find our way past Gimmelwald, down and down to the head of the Lauterbrunnen valley, and all day long we realise to the full the meaning of its name—nothing but water. Torrents rush down the steep sides in great leaps, or fall sheer over hundreds of feet; rainbows glitter on the thin veil of mist made by smaller falls, and the path through the woods is ever twisting and turning as if to disclose new beauties at different points.

Presently we find ourselves at the foot of a high cliff, and, lo! there is one of the hotels at Mürren perched on the very top of the height; on the other hand are the steep slopes leading to the Jungfrau mass. Climbing a little way up this slope, we come to the Tummelbach Falls, where the water rushes magnificently through rocky chasms in the heart of the mountain. We stand peeping into these chasms, sheltered from the spray by umbrellas provided by little boys on the spot, and then see the mass of water shoot out in one wild bolt into mid-air, to fall in a rushing stream below. And then, as we pursue our way down

the valley, we fall in with a delightful Swiss schoolmaster, who tells us of the school he taught in in New York, and of the interest of Zurich, where he lives, till we wish our tour could take that in too. We are astonished at his powers of walking, and have at last regretfully to say good-bye, and see him swing on

towards Interlaken, while we must stop at Lauterbrunnen, at the point in the valley where we started our climb up to Mürren. A bigger climb is now in store for us, up the Wengern Alp and up to the top of the pass of the Little Scheidegg, but we decide to do it by the railway, which winds upwards through meadows and pine-woods, over bridges, and through tunnels.

The views become grander and wider as we go up and up, over the Lauterbrunnen valley by which we have come, and to Mürren and the mountains behind. And then we feel quite bewildered by the overwhelming nearness of the glaciers,

and the immense and dazzling snow mountains, now only two or three miles away. We have begun to be familiar with the forms of many others beside the Jungfrau, the Monk, the Eiger, the Silverhorn. We spend the rest of the day exploring the various points of view, and parts of the daring railway which aims at reaching the top of the Jungfrau by a series of tunnels and

lifts. We feel deep interest in the climbers, with ice-axes and hammers, who can strive to win the top—we would give something to be able to join them or even to look down on the summits from an airship. We feel so unwilling to leave this wonderful ridge, whence our onward route can be seen through Grindelwald



1 SWISS PEASANTS AT BREAKFAST



2 THE UPPER GLACIER AT GRINDELWALD



to the Great Schiedegg beyond, that we stay another day and night on the top, climbing the Lauberhorn, and spending hours drinking in the wild beauty of the entire chain of this Bernese Oberland, which we first saw so distant and ghostlike from Berne.

We feel as if we had descended to another world next day when passing through noisy Grindelwald, with its crowds of tourists and vehicles, shops and hotels, so we push on towards the beautiful three-peaked Wetterhorn, and spend the night in an hotel an hour or so beyond Grindelwald, near the Upper Grindelwald glacier.

We visit the Ice Grotto cut out in the thickness of the ice, and find great interest in the blueness of the cracks, and the débris brought down by the ice river and dropped where it thaws, and we cannot resist a trip in the wonderful train by which we mount high in air, as in a lift, and look far over the sea of ice, with its frozen waves and the smiling valley, which forms such a contrast with its beautiful pastures, shut in by bare peaks and dazzling snow.

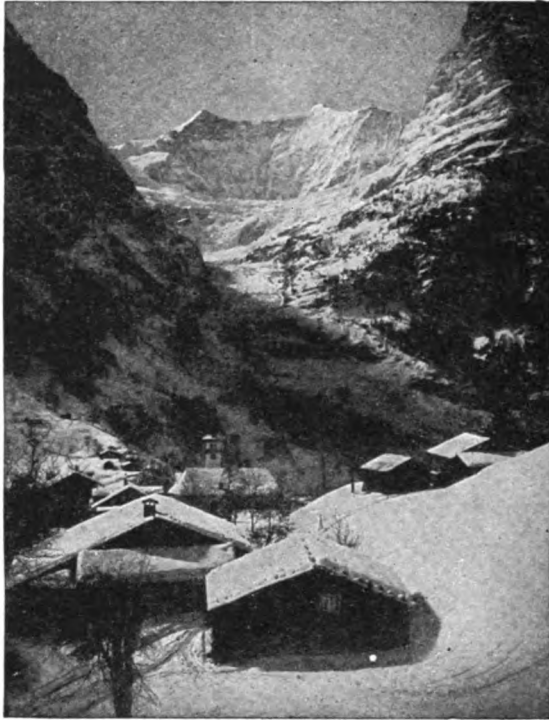
And then, after vainly trying to make friends with a splendid St. Bernard mother and her puppies, we set our face for the pass of the Great Scheidegg, up and up—enjoying the bluebells and the heather, and the little leaping rills, and the colours of the rocks and the sky—and thankful indeed are we for coffee at the inn on the top of the pass, whence we get a farewell view of the giants who have made our lives seem fuller and wider, and the world a nobler home than we have ever realised before.

It is easy enough descending by the lovely path overshadowed by the Wetter-

horn and his companions. Now and then we hear the thunder of a falling avalanche and see the light snowflakes dispersing like a white cascade. It is in the early spring that the very destructive falls happen, burying chalets, and, indeed, whole villages.

We get beds at a saw-mill when night overtakes us, and next morning find it difficult to leave the fascination of watching the running water turning the wheels and working the busily cutting saws; but Rosenlaui with its wonderful gorge calls us, the splendid Reichenbach Falls with their wide-spreading spray

call us, and so does the romantic pass, all rocks and trees and ferns. Then, avoiding Meiringen, we find our way through the amazing gorge of the Aar to Innertkirchen. A good night's rest fits us for the long ascent of the monotonous Genthäl next day. Next morning the mist clears as we pass the beautiful Engstlen Lake, with its glorious lights and shadows, and the majestic Titlis Mountain comes well into view as we reach the summit of the Joch Pass



THE VILLAGE OF GRINDELWALD  
Copyright by Underwood & Underwood, N. Y.

and begin to descend the steep paths through woods towards Engelberg. We rest for the night at the Hotel Hess, where climbers often stay before starting for the top of Titlis. We much wish that we could see the view from there, for it takes in all the Alpine mountains from Savoy to the Tyrol, and away to North Switzerland and South Germany.

We give but a passing look at Engelberg in its green valley and at the huge abbey, and then take the train down to the valley so famous in Swiss history, leading past Stanz to Lake Lucerne. But our stopping-place is Dallenwil, a little roadside station,

from which we mount and mount by a bridle-path for three hours and more through woods and pastures. Over a rushing river we pass and then up a very steep, bare hill, till at last we reach Nieder Rickenbach. There is no road for carriages, so the only way to get there, if one's feet are not strong enough, is on mule-back—or to be carried in a chair, like a Guy Fawkes, by two men.

The luggage, the food, the furniture, everything has to be thus carried up. We are glad to see our portman-teaus awaiting us, and to settle down for a week to explore the beautiful neighbourhood and enjoy the delightful quiet and comfort of the hotel, and the views in every direction. One treat we have is the entertainment given by the children staying for their holiday in the convent close by. There are piano duets by the nuns, action songs and recitations by the children, and charming singing led by a dear old father, who beamed round on the children and the visitors in the kindest way. And we have fine times exploring, losing our way and finding it again, watching the children keeping the cows together, the nuns making hay, wearing hats above their veils, adding to our flower and photograph collections, and all the time breathing the purest and most invigorating air possible.

All too soon the day comes when we must start again, posting the luggage to Gersau, on Lake Lucerne, and, with knapsacks once more buckled on, we climb the hill behind Nieder Rickenbach, and from the top look down to the great blue lake below, and to others glittering in the distance; to the Rigi and Pilatus—grand heights,

though not snow giants. And then we drop down and down to the lake, where we take a steamer across to Gersau, our headquarters for the rest of our holiday. How we enjoy watching the lovely changes on the lake, the steamers, the



A YOUNG GOATHERD

boats full of apples, the reflections of the moon and stars by night, the sunrise and sunset! We find endless beautiful walks both level with the lake and high up on the wooded slopes above it. Many little trips, too, we take by the steamers, and then climb to spots famous for their views. Our longest and last trip is to the very end of the lake, and then by train to Goeschenen, by the railway so wonderfully engineered, rising by circular loops and tunnels to the levels required. As we have always longed to go in a real Swiss coach, which looks like three carriages built into one, we take the Ober-Alp coach from Goeschenen. We get a glance into the



A MOUNTAINEER WITH A CAPTURED EAGLET

black mouth of the tunnel that pierces the heart of the great central mountain mass of St. Gothard, rumble over the Teufels Bridge, and past the interesting fortifications which guard the passes. We meet the soldiers returning from their practice in carrying guns in pieces on mule-back up the steep hills—all for defence, not attack. And the coach with its five horses rattles on past Andermatt, then up and up by zigzag roads, backwards and forwards dozens of times. The view looking back becomes more and more magnificent, and at last the lake at the top of the Ober-Alp Pass is reached. Then we scramble down, rather stiff, to stay the night at the little hotel. The horses now have a descent as steep and

long as the ascent we have just made, to the lovely Val Tavetsch, through which the infant Rhine starts on his long journey to the distant North Sea. It is to see his very beginning, for we are Rhine lovers, that we have come to the Ober-Alp; so great is the disappointment



(a) A VILLAGE STREET

next morning when we find it raining hard. However, we decide to try, and we do a stiff bit of climbing to within five minutes of the little Toma

See, or lake, called the "source of the Rhine." Then suddenly there sweeps down upon us a thick mist, wrapping us round with cold, wet arms and blotting out even the rocks and trees that are nearest. So there is nothing for it but to beat a hasty retreat, walking as carefully as we can. We get dried at the hotel, and take the coach back to Goeschenen and thence back to Gersau, to find the lake a mass of glittering purple and gold under a stormy sunset. Two pouring wet days

help us to feel less unwilling than we were to leave the beautiful holiday country, already withdrawn from our eyes under a mantle of grey mist; and so we start in the steamer from Gersau to



(1) A GIANT ALPINE HORN

can walk on the quays under the chestnuts, and enjoy the views on the lake, the pleasant bustle, the rushing



(2) THE VILLAGE FOUNTAIN

hanging out, as was the custom in the Middle Ages. We see, too, the famous dying lion hewn out of the rock, his paw

sheltering the lilies of France; and we recall the tragic story and the bravery of the Swiss Guards defending the Tuileries to the death. Some of us would like to linger long among the shops—so much is there tempting—for presents to take home in the shape of silver jewellery, painted ivory flowers, and the ever-charming carvings of our little brown friends at Berne. But, as usual, there is a view that must be seen. Electric and cable tramways take us quickly to the Sonnenberg, a height



(2) A LITTLE LACE-MAKER

we go we make plans for next year—plans for seeing the Holbein drawings at Basel and the old houses at Lucerne, and for continuing the journey in the Ober-Alp coach.



MARKING RUBBER ON A RUBBER PLANTATION IN BOLIVIA, SOUTH AMERICA  
CONTINUED FROM PAGE 5592.

## RIDING ON WHEELS OF AIR

### THE STORY OF A BEETLE AND A RUBBER TUBE

A LITTLE beetle has changed the world. If there did not exist a certain wood-boring beetle which trees and creeping plants hate, there would be no motor-cars in the world, no bicycles, no waterproofs, no telegraph cables under the sea. It is because certain trees and plants have the power to make themselves objectionable to insects that we are able to obtain one of the most wonderful materials in the world—indiarubber. What, then, is this wonderful substance, which means so much to men and is so important for the future of the world?

It is simply a resinous, milky substance contained in rubber plants and trees. These trees live in hot, damp, tropical forests where there are swarms of wood-boring beetles. Now, instead of having ants to protect them, as some trees have, and instead of being armed with bristles or thorns, as so many trees are, these trees have a poisonous, sticky juice. As soon as a beetle thrusts its boring weapon into the bark, the tree pours forth this juice.

It kills the insect, and at the same time fills up the wound which has been caused. If the substance dried hard, like clay or putty, it would be

forced out of position when the tree was blown to and fro by the wind. That would leave the wound open, so that beetles might again attack it; while the spores of deadly fungus might find a resting-place in the wound, and gradually kill the tree. Therefore this juice, when it dries, is elastic, and no matter how the tree sways in the wind, it still holds itself in place, safeguarding the tree against further injury from the wound which the wood-boring beetle has caused.

Now, it was not the wise people of Europe who first discovered that this substance which protected the tree from insects might be useful to man. Columbus found the Haytians playing with balls made of this substance when he first went forth to discover America. And a traveller, named Torquemada, noticed, four hundred years ago, that the Mexican Indians used the same substance for making their cloaks waterproof.

The substance which was to work wonders in the whole world was first found in America, and used for the very purpose to which children still put it; indiarubber was a rubber and nothing else. Somebody discovered that it would remove pencil-marks

from paper. When introduced into England, about 1820, seventy-five cents was charged for a piece half an inch long. Artists used it, and were glad to pay that sum, for the rubber was invaluable to them for removing false marks from their sketches. Charles Macintosh, a thoughtful Scotsman, was the first in that country to put rubber to the use which the Indians had made of it; he used it to give us the first waterproof coats, and called them macintoshes, after himself. Then it was discovered that rubber, which would withstand the effects of water, could not be penetrated by gas, and that the majority of other liquids, in addition to water, could not make their way through it. So surgeons had it made up into tubes. But the great discovery was yet to come.

In its natural state, rubber becomes solid under the influence of cold, and soft and sticky under the influence of heat. An American named Goodyear, was the first to discover that all this could be altered by adding sulphur which has been melted by heat. He mastered the process which is known as vulcanising.

By vulcanising we can convert pure rubber into a substance resembling ebony. The black discs of which the gramophone records are made are of vulcanite; so are the black mouth-pieces of tobacco-pipes, the trays which we use for the acids in photography, and so are a thousand other things which we use every day. But there is another form of vulcanised rubber, the soft, of which we can make almost anything—casing for cables, springs for motors and carriages, buffers for railway trains, door-stops, springs, bouncing balls, and so forth.

For ten years Goodyear worked at the task of perfecting his invention, and sadly did he suffer from the scoffers at the time. He conquered in the end, after bitter suffering and poverty, and by 1844 he was triumphant. At about the same time a man named Thomas Hancock was at work on the same idea in England, so that two different men, in different parts of the world, were working at the same scheme at the same time.

It was this newly-treated rubber which first made cycling possible. There had been cycles long before—hobby-horses, bone-shakers, and other dreadful

things of the same style. The rubber tire gave them new form, new life and dignity for the first time. But, as those of us who are old enough to have ridden the old, tall bicycles, or the first "safeties," will remember, the first rubber tires were small and solid. How they jolted and jarred along the stony high-ways, carrying the rider home with his teeth aching and his wrists almost shattered! Motor-cars could never have run with tires of this sort, for the bumping over even the very best of roads would simply have shattered the engines to pieces in a very short time.

Happily, in the last quarter of the nineteenth century, Mr. J. B. Dunlop, of Dublin, thought out the grand idea of making an air cushion for a bicycle tire. He was a long time working at it, and at first he fitted one on a



The common indianrubber plant of our conservatories

block of wood, and trundled that about his yard. It answered all right, so he made and fitted a tire of this sort to his own bicycle, then put one on the machine of his son, enabling the boy to win a race for which he had entered. The principle of the first Dunlop tire was the same as that which makes a motor-car or bicycle ride so delightful to-day. The inner tube is made of comparatively soft, thin rubber. It is that which we blow up with wind. The cover which fits over that is stout and hard. That simply serves to protect the inner tube from injury. It is that tube filled with air beneath the cover which has worked the marvel. The wheels of the bicycle or car actually run on the compressed air in the pneumatic tube.

The invention of Mr. Dunlop was taken up by a keen man of business, Mr. Harvey Du Cros, whose two sons became famous cyclists, riding the new tire. To-day there are in our own country many, many thousand cycles with these tires, and also many thousand motor-cars. But the invention has gone all over the earth. In every civilised country there are cycles and motor-cars using these wonderful tires. This little tube of air has made perhaps the greatest revolution of modern times. Places where there are no railways are now visited as easily as if Ariel had given us his wings.

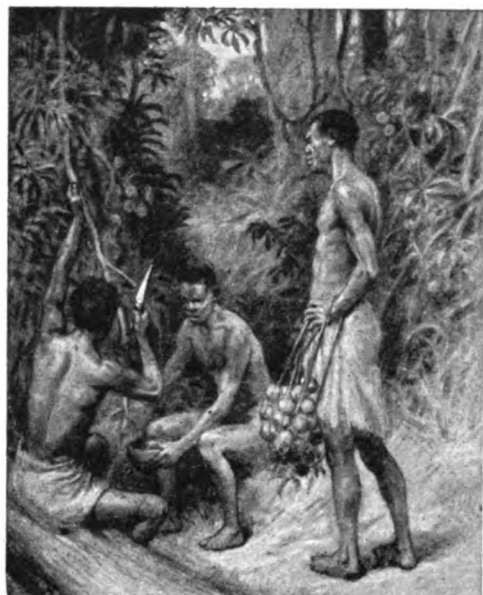


## DRAWING MILK FROM A TREE TO MAKE RUBBER

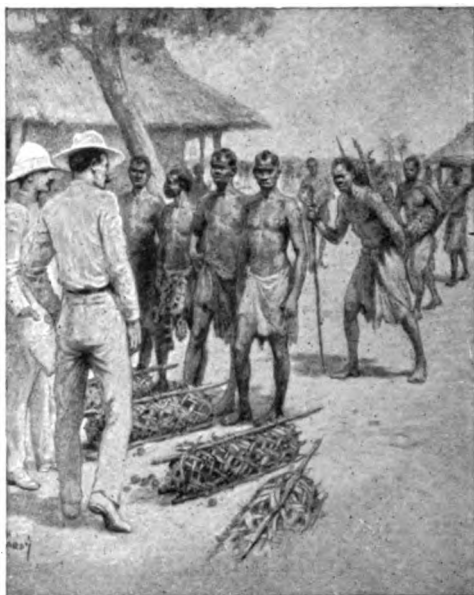


Here we see a native girl tapping a rubber tree in Ceylon. Holes or grooves are cut in the trunk of the tree, and in a few hours milky juice flows out and is caught in basins or tins. A good tree yields about twenty gallons of juice in a season, producing forty pounds of rubber. The juice is called caoutchouc, which is a native American word.

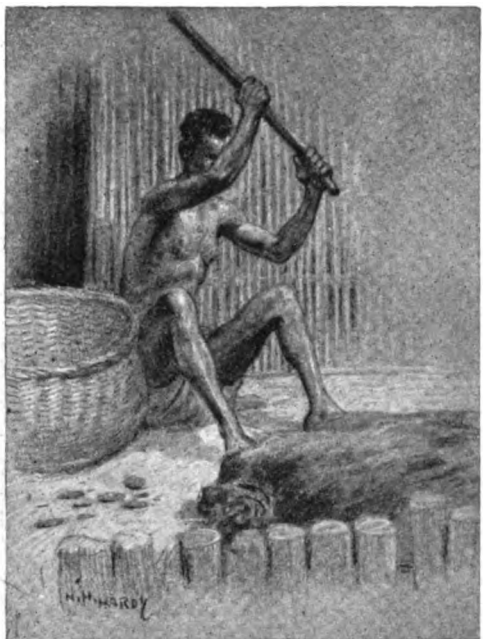
## GATHERING RUBBER IN AN AFRICAN FOREST



Huge quantities of rubber come from the Congo Free State and other parts of tropical Africa, and here we see natives tapping the trees, while others are picking the fruit, from which to obtain seed for planting fresh groves of rubber trees. Much of the rubber that comes from Africa is obtained from climbing shrubs.



If the juice is allowed to stand for a time it becomes more or less solid, and the natives then roll it into little balls. In this picture the negroes are bringing the balls of rubber that they have prepared to the European traders for sale. Rubber, when first brought to Europe, was called elastic gum, and a single inch cost over a dollar.



The balls of rubber have many impurities in them, and they are cleaned to some extent by being placed in a sack and beaten, as shown in this picture. Of course, on proper rubber plantations, such as those in Ceylon and America, the rubber is cleaned scientifically by boiling.



The rubber is next cut into slices, ready for proper drying before being sent to market. There are various methods of drying. Sometimes it is laid out in the sun or left upon racks, while at other times it is dried by fires. Some of these processes are shown on page 5682.

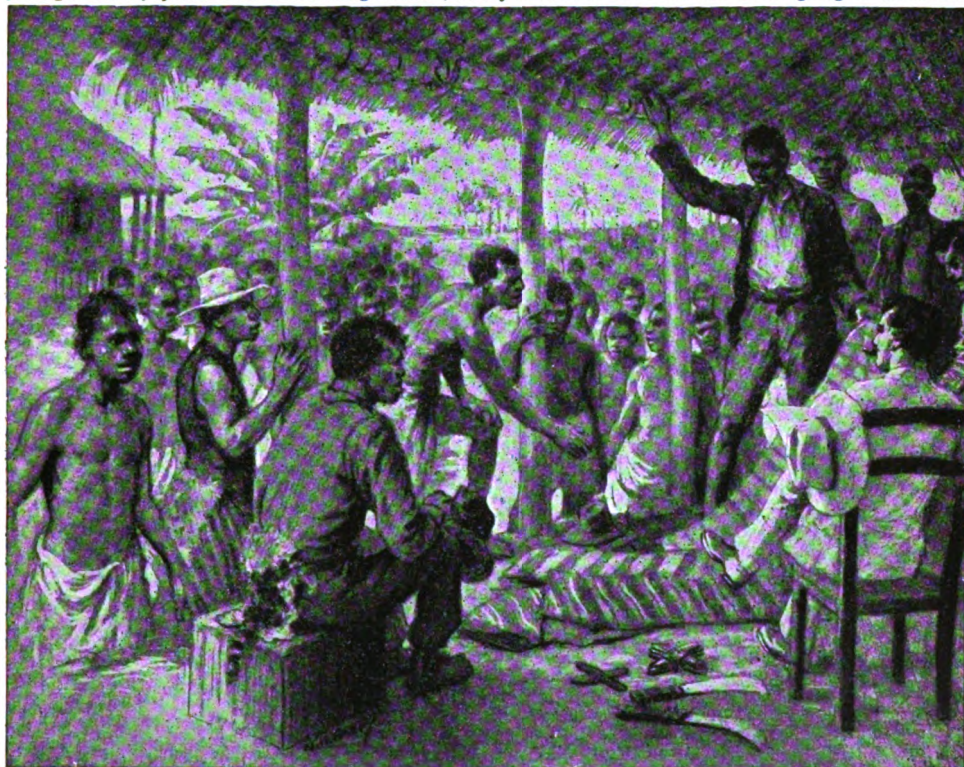
The photographs on these pages are by Underwood & Underwood, and Suarez, Hermanos & Company



## PAYING THE RUBBER MEN THEIR WAGES



When the natives of Africa bring the rubber that they have gathered in the forests to the European settlements, it is weighed, and payment is made according to the quantity delivered. Here we see the weighing of the rubber.

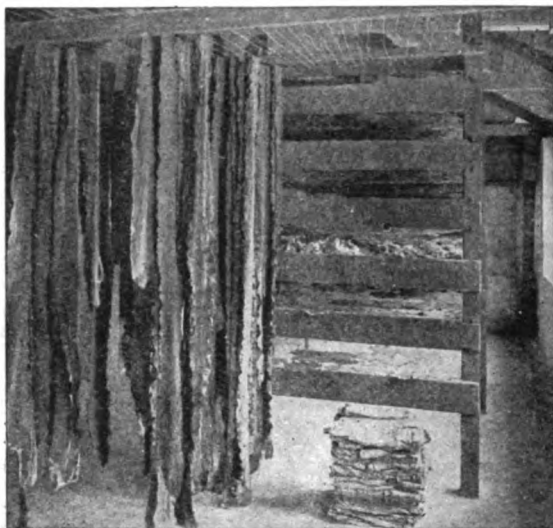


The natives usually receive their payment, not in money, but in such articles as hats, brass rods, and so on. This picture gives us some idea of the scene when the negroes are being paid for their rubber. Many of the African rubber forests have been ruined by the careless gathering of the rubber, owing to the great demand. In the Congo, the forcing of the natives to collect rubber has been accompanied by terrible cruelties on the part of their rulers.

## PREPARING THE RUBBER FOR USE IN CEYLON



Every country has its own method of preparing the rubber for use. The most scientific methods are used in America. Here we see the inside of a rubber factory in Ceylon, where the material is being rolled out by natives after the juice has become solid. The basins standing on the right contain caoutchouc that is getting hard.



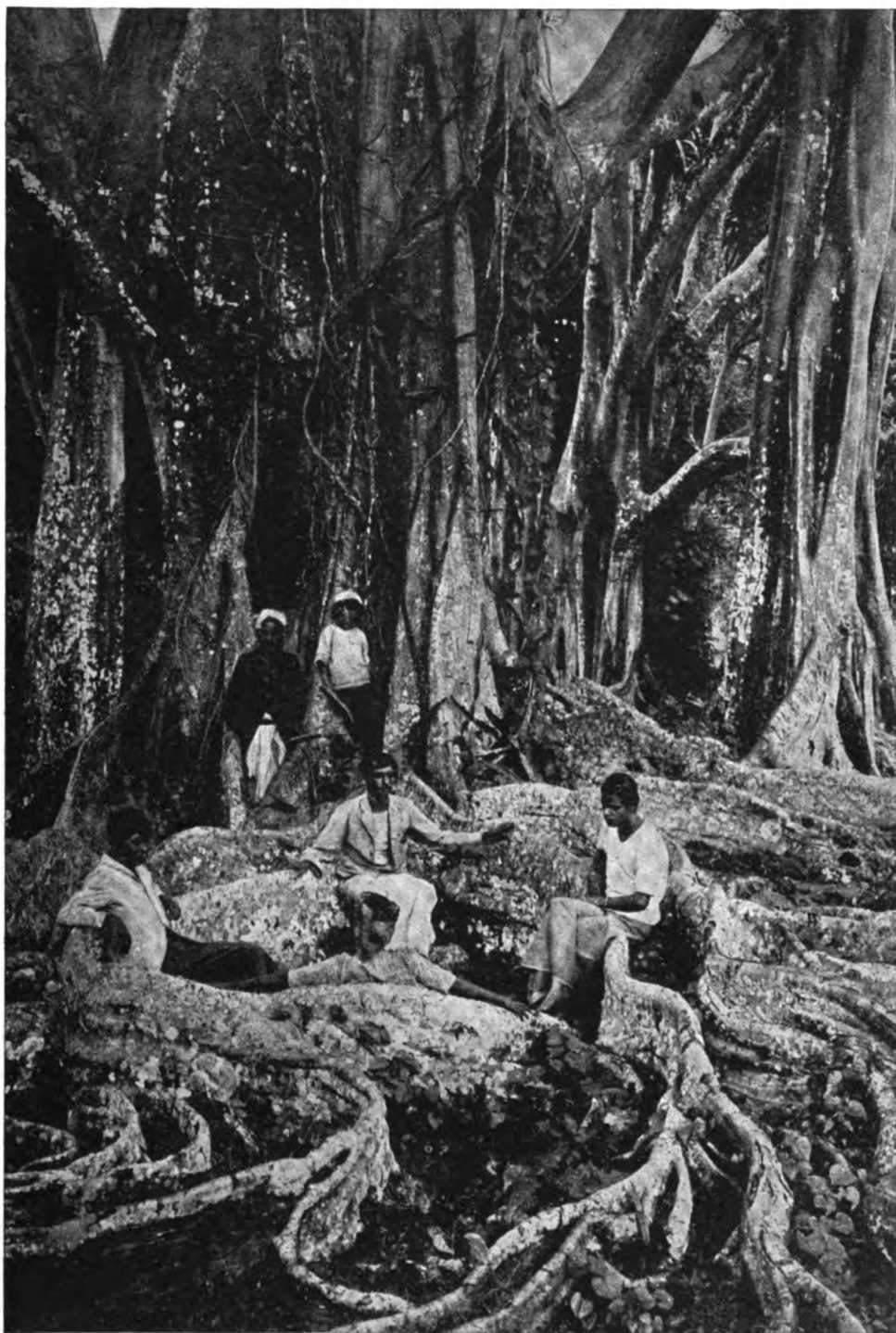
The picture on the left shows a drying-room in Ceylon, the rubber, which has been cut into strips, being allowed to hang up until it has dried in the ordinary natural way without artificial heat. On the right we see a corner of a drying-shed in Africa. The rubber is laid out on shelves until it is dry enough to take to the European markets for sale.



In this picture a method of drying rubber by artificial heat which is adopted in Ceylon is shown. The rubber is placed in ovens, and is, of course, dried very quickly. After various processes, the rubber is pressed into blocks and then cut into sheets or threads for use. Most of the rubber used to-day has sulphur mixed with it to make it more elastic and serviceable for use. This is called vulcanising the rubber, and the discovery of the process has been of the greatest importance to the world, for without it rubber could be used for very few purposes indeed.



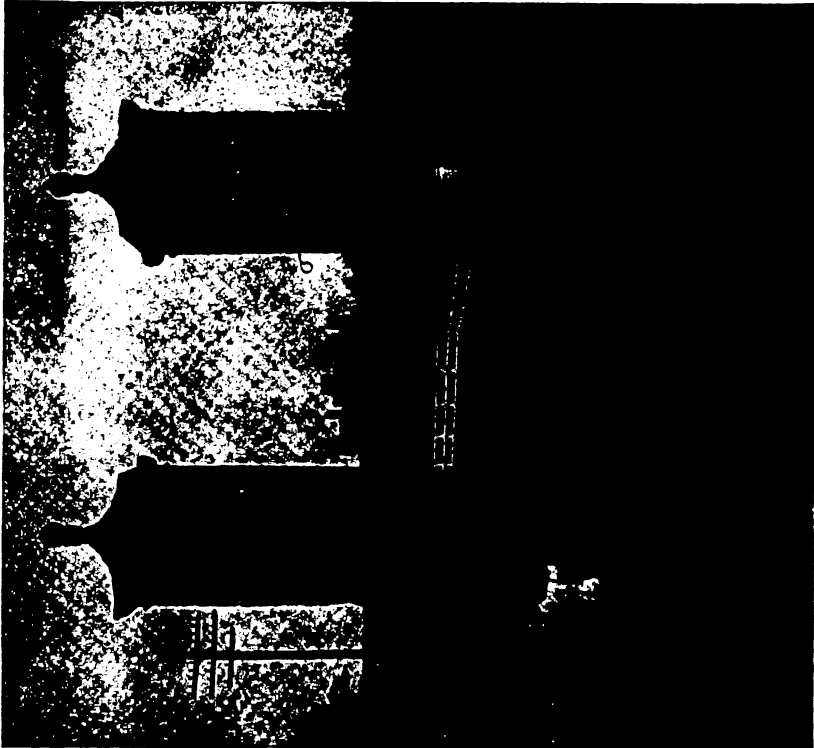
## THE WONDERFUL TREES THAT GIVE US RUBBER



Indiarubber, which is now used in a thousand different ways, was regarded, a hundred years ago, merely as a curiosity that was useful for rubbing out pencil-marks. To-day the world cannot get sufficient rubber for the many uses to which it is put. Rubber comes from the milky juice of various kinds of trees that grow in tropical countries. In this picture we see some of the gigantic rubber trees in Ceylon, with their wonderful roots spreading for a great distance over the surface of the ground. The foliage overhead often covers an area of six hundred square feet.



## THE OLDEST CITY IN THE UNITED STATES



Pictures copyright by H. C. White Co.

You were told of the founding of St. Augustine in 1565, and that it is the oldest city in the United States. The picture on the left is the old city gate, which was built while Florida was still a possession of Spain. Near it you see telephone wires, a mail box and other signs of modern life. On the right is one of the great hotels to which thousands go every year to escape the cold of northern winters. There are many of these winter hotels in Florida, some of them very large.



## HOW HIGH CAN MEN FLY?

CONTINUED FROM PAGE 565.

It used to be thought that an aeroplane carrying a man could fly only very near the ground, because there are many reasons why that is easier. For one thing it is safer, and for another it might be expected that near the ground the changes in the wind would be less. Two much more important reasons depend on the fact that the air is denser near the ground. This means, in the first place, that less power is needed to keep the aeroplane up, whereas the higher it goes the rarer is the air, and therefore the less able is it to support anything heavier than itself. And, in the second place, it means that the oxygen which the engine of the aeroplane burns is less rare near the ground and more able to feed the engine and keep it going.

Nevertheless, it has been proved that the very lightest type of aeroplane can be flown at a height of four thousand feet, and one of those best able to judge declares that he could go more than twice as high. This has an important practical meaning, especially for all connected with the army. It means that, contrary to expectation, aeroplanes can fly so high as to save from anyone firing at them from the ground.

### IS A BOX IN WHICH A CANDLE HAS BURNT LIGHTER THAN A BOX AND CANDLE?

When we burn the candle in the ordinary way, it seems as if something had been turned into nothing, because the matter of the candle disappears and there is nothing to show for it. If it were true that the candle turned into nothing when it

was burnt, we should be in the presence of an utter mystery without any meaning. But it is just such an experiment as this that gives us the key to what really happens when a candle burns, that explains to us why it disappears, and, what is much more important, teaches us that we are utterly wrong in supposing that when the candle disappears the matter which made it is destroyed.

When we weigh the box, to begin with, we have to reckon with the box, the candle, and the air in the box; but when we weigh it a second time, the box remains the same, but the candle inside has vanished. Yet the weight is the same, and this means that the air or mixture of gases inside the box is heavier than it was before, and heavier by just the weight of the candle; no more and no less. The substance of the candle has combined with the gases of the air to form new gases. Nothing is lost, nothing is gained, and though there has been chemical change, we know that that does not affect gravitation, upon which weight depends; and so the weight remains the same.

### WHY DOES A STICK SEEM TO BEND WHEN PUT INTO A POND?

We see a stick, as we see anything else, by the rays of light which come from it. These rays have certain laws as to how they travel. If they possibly can, they travel in straight lines. And so, if the stick is straight and we see it from end to end through one and the same thing, as when it is held in still

air or in still water, the stick appears to be straight. If the air or the water be moving, we may not see the stick straight; but we shall never see it straight if we put it half in the water.

We can see this for ourselves with a stick in a pond, or with a pencil, which is a kind of stick, in a tumbler of water, which is a kind of pond, or in many other cases. The bend that we notice always occurs at the surface of the water. We see it best if we raise the tumbler and look at it sideways. We then see half the stick through air and half the stick through water. At least, that is what we might be inclined to say, but it is not quite the whole truth. We see the upper half of the stick through the air all the way, and there is nothing more to say about that; but if we think, we shall understand that the light from the lower half of the stick is travelling to our eyes first through water and then through air.

Now, the rule is that whenever light passes from one thing to another, as from water to air, or air to water, it gets bent; and so, though the part of the stick under the water appears straight enough when the water is still, it is bent at an angle at the part above the water. This sharp bending of the rays of light in such cases is called refraction, which really means breaking.

#### HOW WAS IT DISCOVERED THAT THE SUN IS BIGGER THAN THE EARTH?

There are many distinct ways which all help to teach us the size of such a body as the sun. Of course, when we use such a word as bigger, it ought to refer strictly to size, but we might also be thinking of the amount of stuff or matter in the sun; in other words, there is the question of volume and there is the question of mass, and the study of each helps the study of the other.

We can learn the size or volume, of the sun by measuring the distance across its face. The mere measurement of the disc as it appears to us, however, would not, in itself, tell us any real fact: it would only convey the idea that the sun is about as large as the moon. But if we know the distance of the sun from us, we can work out its size from its distance and the size of its face as it appears to us.

We can study the mass of the sun by applying our knowledge of the law of

gravitation. Gravitation does not in the least concern itself with mere volume, bigness, or size, but it concerns itself altogether with mass. When we know the law of gravitation, it will teach us the mass of any heavenly body of which the attractive power can be measured, because we know that that attractive power depends exactly upon the mass of the body in question, other things being equal. In this way the mass of the sun can be learnt, and even the mass of dark stars, far away in space, of which we are able to know the existence only because the movements of other stars are seen to be disturbed by their gravitation.

#### WHY DO SOME NOTES IN MUSIC AGREE AND OTHERS MAKE A DISCORD?

It is now possible to count in each second the number of waves that make a musical note. When we study in this way the notes of a chord of two or more notes that agree and are harmonious, we find that the proportions between the numbers of waves in a second are always very simple. The chord that satisfies the ear best is made of notes that have, for instance, 400, 500, 600 and 800 waves in a second. It does not matter what the actual figures are at all, so long as the proportion between them is that between 4, 5, 6 and 8.

But a chord which we dislike and call a discord is made of notes that have, perhaps, these numbers of waves in a second—400, 477, 701, 835, or any other numbers that do not have a simple proportion to each other. Thus not very many harmonies are possible, but the possible number of discords is infinite. But discords are very useful in music, for they add enormously to the value of the harmonies and to our pleasure in them when they come.

#### DO THE WICKED NEARLY ALWAYS TRIUMPH IN THE WORLD?

All sorts of things have been said on this subject. For instance, it is said that "Honesty is the best policy," as if to mean that it is the best policy for this world, and that the honest man will always triumph over the knave. On the other hand, many men in certain kinds of business declare that it is quite impossible to make a living if one is honest. They teach, indeed, that honesty is the worst policy in ordinary life. Ages ago the author of one of the Psalms declared that, though he was

old, he had never seen the righteous forsaken, nor his children begging bread. In the modern world we see this every day, just as we also see righteousness prospering. And we see one dishonest man, perhaps, the richest man in the world, and another going to penal servitude for his dishonesty.

There is no rule. So many things, of such various kinds, made for triumph in this world that being good or bad may seem to work either way in turn. But goodness is worth while, because triumph in this world is worth nothing in itself, and goodness is worth everything in itself. So, in a higher and deeper sense of the word, and in the things that are really the most important, honesty is the best policy.

**AS PART OF THE WORLD FACES DOWN, WHY DOES NOT THE SEA FALL OUT?**

This is a very natural question to ask until we remember what our earth is. It is a ball in space, with infinite distances on all sides of it. In these distances there are real directions, of course—there is north, toward which the North Pole of the earth points, and south, east, and west. These terms have real meanings, but so far as the great universe is concerned, up and down have no meanings at all. From our point of view, New Zealand is facing down, and it is always facing down, even though at 12 o'clock noon and 12 o'clock midnight we and it have changed places; and, from the point of view of New Zealand, we are always facing down. Each of us is just thinking of his relation to the earth, and our words have meaning simply and solely in relation to the centre of the earth.

Now, the centre of the earth is always down from New Zealand or from us at any time of the day or night; and every part of the world faces up, for its face is turned away from the centre of the earth. The power of the earth's gravitation acts toward the centre of the earth, pulling everything down toward it. If we jump here the earth pulls us back; if a New Zealander jumps at the same time almost in the opposite direction, the earth pulls him back too.

When we think it out like this we can understand for ourselves why the sea does not fall out at any part of the earth's surface, and why there is no more reason for it to do so at any one point than at any other.

**WHY DOES WATER SPLASH WHEN IT DROPS ON THE GROUND?**

In order to answer this question we must first know why water forms drops at all. The answer is that there is a force called cohesion—or sticking together—which acts between the little molecules of the water, and holds them together in the round form that makes a drop. Now, when the drop falls upon the ground it is broken up, and this can only mean that something has overcome the force of cohesion between the drops, and has pulled them apart with a greater force than that which held them together.

This force is to be found in the motion of the drop as it fell. When the motion of the drop is arrested, it cannot be lost or destroyed; it must turn into something. If the water had sufficient cohesion, and were elastic, the motion would be turned into motion in the opposite direction—the drop would bounce. But, instead of that, the force of the drop's motion is turned into the force that overcomes its cohesion and drives its different parts asunder.

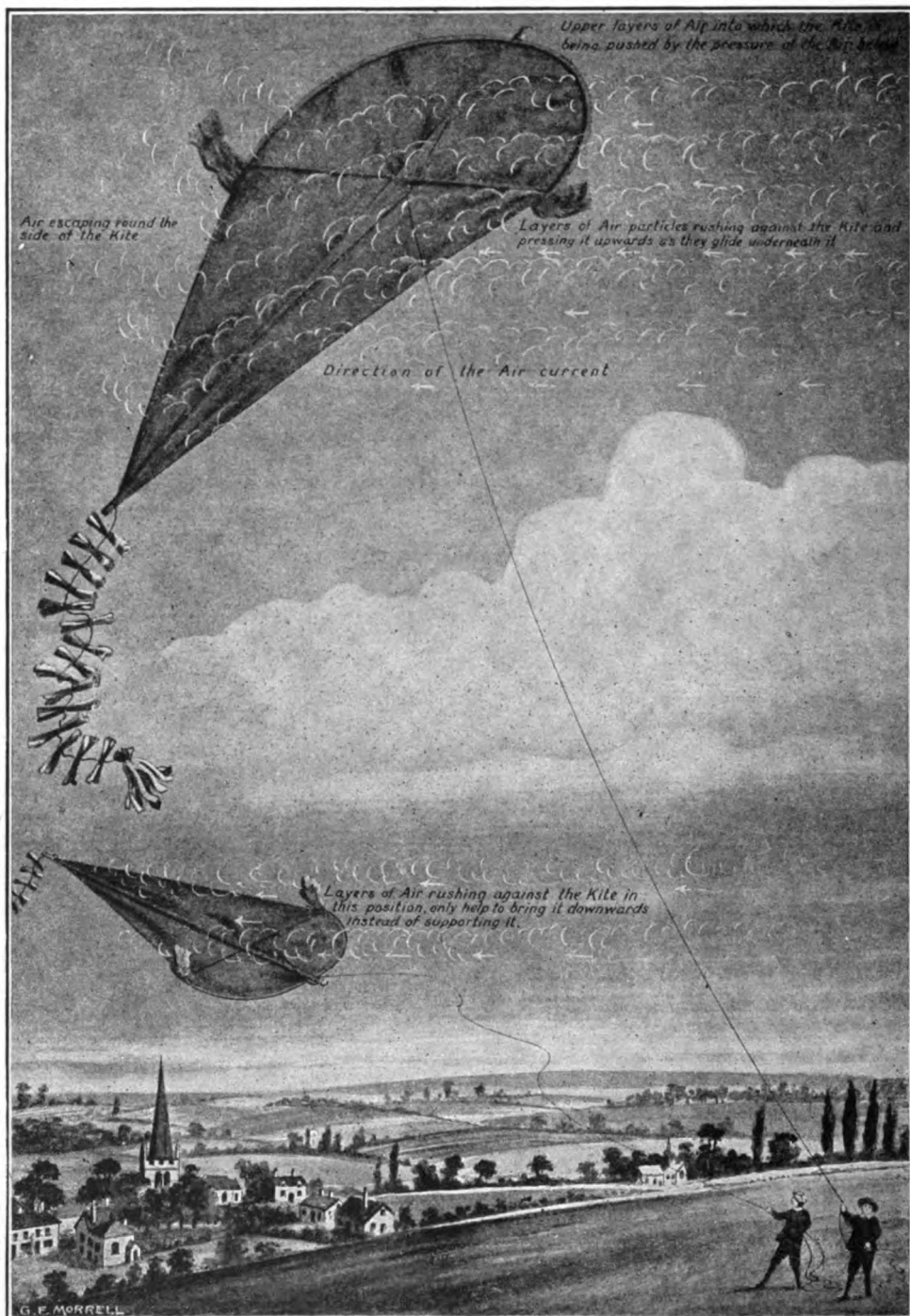
**WHAT MAKES THE WATER DRY UP IN HOT WEATHER?**

Whenever water or anything else disappears we know that it has not been made into nothing or destroyed, but has gone somewhere. In this case it is very easy to say where the water has gone. It has gone into the air; and exactly as the plate or the ground or whatever the water left is drier, so the air is wetter, whether we notice its wetness or not.

Our question then is, why does the water go into the air, and why especially in hot weather? Whenever water is exposed to an atmosphere that does not already contain as much water as it can hold, the water passes into the air in the form of water-vapour. We say that it evaporates. And the hotter the air is the more water will it hold, though so long as the air does not contain as much water as it can hold, water will evaporate at all temperatures, low as well as high.

Now, if anything happens to lower the temperature of the air when it is as full, or nearly as full, of water-vapour as it can be, the very reverse of what happened before takes place, and the water comes out of the air, perhaps as dew, perhaps as rain. And now we see why this may happen in hot as well as cold weather—that is, why it may rain in summer, as we all have opportunities of noticing every year.

# WHY A KITE KEEPS UP IN THE AIR



The air above the earth is in layers of different densities, and these are constantly moving in a horizontal direction. The string of a kite is so placed that the air can beat against the face of the kite and preserve it at an angle that allows the bulk of the air current to glide downwards. But this air, meeting the dense air below, is pressed up against the kite, which, when it is pushed, moves where there is least resistance—namely, upward through the thinner air. And so the process is constantly repeated. If, however, the string is fixed in the wrong position, or gets entangled, as with the lower kite in the picture, the kite is not maintained in its proper position, and it falls.





## THE SEARCH FOR A HAPPY MAN

CONTINUED FROM PAGE 565.

ONCE upon a time an Emperor of China yearned for the sight of one human being who was really happy.

"I am like the sun," he thought to himself—"like the sun, which only picks out the mountain-tops in gold, but whose beams shed no such splendour on the valleys below."

And having turned this matter over in his mind awhile, he bade his chief master of ceremonies lay before him the list of his civil servants.

The master of ceremonies bowed and departed, and soon afterwards returned, bringing with him 666 paper scrolls, each 66 yards long. And even these had barely room for all the names.

"What a formidable host!" cried the emperor, and then, pointing to a name in the list, he charged the master of ceremonies to find out what manner of man he was.

The emperor was wont to have his wishes carried out with lightning speed, and ere he had time to count 10,000, his messenger was back, and, with a very low bow, announced:

"The man whom your august Majesty deigns to ask about is Tun-Li, an old and trusted servant of yours. Honourable and discreet as an official, he is also a model father of a family."

"Then shall well-merited happiness be his portion," cried the emperor, "for I will gladden his heart with a

glance of my eyes. Go, therefore, and tell him that I have vouchsafed to admit him and his family to pay homage to the Son of Heaven on the first day of the coming month."

"Assuredly Tun-Li will die of joy!" said the chief master of ceremonies.

"Nay, let us hope he may see and live," replied the good monarch, his features wreathed in smiles as he spoke. "And now go and make known my wishes."

"Well, what news?" he asked, when the master of ceremonies, having fulfilled his mission, reappeared.

"Your most sacred will has been done, almighty Son of the Skies," replied the other, falling at the emperor's feet. "Your gracious command has been communicated to Tun-Li, with the beating of drums and the flourish of trumpets, amid the loud acclamations of the people whose house your wisdom has exalted."

"And how did Tun-Li receive the tidings?"

"Sheer joy seems to have robbed him of his wits. Never before were such rejoicings witnessed upon earth!"

Like all things to which we look forward, the day for Tun-Li's audience seemed slow in coming, and the emperor grew weary of waiting, for he yearned to behold a happy man.

Wherefore, one evening, disguised as a common coolie, together with a companion, he wended to that distant quarter of Pekin where Tun-Li dwelt.

And while still afar off, his ears caught the noise of shouting in the house of Tun-Li.

"Can the rejoicings be indeed so great?" thought the emperor, astonished and delighted.

As he approached, the sounds grew clearer, and at last he distinguished words.

"O most wicked of wives, most despicable creature the sun ever shone upon!" shouted Tun-Li. "Accursed be the day and the hour when I wed you. Of a truth, evil spirits must have possessed me!"

"For three hundred moons have we been married," replied a woman's voice, "yet never till to-day has an angry word passed your lips. You always found me true, and never failed to praise me."

"Well, and what of it? Have we ever before been summoned to the dread presence of the emperor?" thundered Tun-Li. "But now you will cover me with disgrace—you will make me the laughing-stock of the city! What do you know of making the three-and-thirty graceful curtsies which etiquette calls for? O could I but move the earth to swallow me up for very shame of you—aye, of you and of our daughter!"

"Dearest father," sobbed Tun-Li's daughter, "have you not always said that I was your beautiful Mu-Sian?"

"Well, and what if I have? Words will not make your feet small and dainty. They are over seven inches long!" cried Tun-Li, sorely perplexed. "I am sure the emperor will die of fright when he beholds such a terrible foot!"

"O father dear, you forget that if my feet are not tiny, neither have I been brought up to be carried about in a sedan-chair," wailed poor Mu-Sian, in tears. "My feet at least serve me to walk with. And when my turn comes, I, too, shall be obliged to marry a humbly and struggling official of your own rank. For have I not been trained to do work?"

"Enough!" cried Tun-Li.

Just then the gong sounded over the door, and a moneylender strode in.

"How now, Tun-Li?" he cried. "Have you thought over my terms?"

"If I agree to your terms, we must all die of hunger," hoarsely whispered Tun-Li, burying his face in his hands.

"Do as you choose, then!" retorted the moneylender. "But bear in mind that time is on the wing. Hesitate a little longer, and there will be no blue silk robe with gold-embroidered sleeves for yourself, no stitched silk dress for your wife, and no garment with lotus patterns for your daughter. You know my price; you must pay it or do without the things which you cannot dispense with if you are to appear before the emperor. What do you mean to do?"

"Have your way, then; I have no choice. I must do as you say," murmured Tun-Li despondently.

"Good! Let me again remind you, then, of the conditions, so that there may be no dispute later. I undertake to supply you with all you need for this Court function; you, on your part, will hand over to me three-quarters of your income on the first of each month."

"But we shall surely die of hunger, man!" cried Tun-Li, and smote his hands together in despair. "Take the half, and don't ruin us outright!"

Tun-Li, his wife, and their poor little Mu-Sian fell on their knees before the moneylender, and begged him to be content with half of Tun-Li's salary, adding: "And even then starvation will haunt us all our lives!"

But the man refused to yield.

"No; three-quarters of your income every month! That is my last word!" shouted the man. "And now yours must be either Yes or No. Which is it?"

And Tun-Li, his voice muffled till it could hardly be heard, answered:

"It shall be as you say."

"O heavens, what a scene!" muttered the unseen emperor, as he witnessed this misery in Tun-Li's home, and the tears coursed down his cheeks.

Then the emperor betook himself to his palace and donned his usual robes. And the chief master of ceremonies, dropping at the emperor's feet, began to address him, saying, "Almighty one."

"Let me never hear that name again," commanded the monarch, moved to wrath. "Can he be called almighty who is powerless to make one man happy?"

At this thought his eyes again grew tremulous with tears. And for all comment he made this sad reflection:

"I am indeed like the sun, which from afar illumines and warms, but when at too close quarters to the earth blights all things that live and thrive thereon."

## A TALE OF A SHOP WINDOW

MISS TOINETTE lived in a glass house, in the midst of such beautiful things that every little girl who saw it flattened her nose against the glass, and wished she lived there too. To begin with, Miss Toinette had whole trunks full of beautiful clothes that came straight from Paris.

One trunk was full of dresses, lovely ones—some for mornings, some for afternoons, and others for evenings. They were made of the daintiest of silks and velvets and muslins, in all sorts of beautiful colours.

There were hats, and bonnets, and cloaks, and tiny kid gloves, and silk stockings to match every dress. And the underclothes—why, they were so dainty that they looked as if they had been made for a fairy queen. And so they had—for a beautiful fairy queen named Toinette, late of Paris, but now of Chicago.

Now, Miss Toinette wasn't really and truly a lady, or a little girl, or a fairy queen. She was a doll, and the glass house in which she lived was the glass window of a great toy-shop in Chicago.

She was such a stylish doll, and cost so much money, that even the mammas of the rich little girls shook their heads when the shopkeeper told them the price of Toinette.

Someone else lived in that shop window, too; and when the shop was closed, and everything was quiet, a little grey mouse would c-r-e-e-p, c-r-e-e-p out of his hole, and run over and sit in front of Toinette and talk to her.

She could not talk anything but French, and would say "oui" and "non," which mean "yes" and "no," and "mère" and "père," which mean "mother" and "father," beautifully. But she could understand Mousie Grey, even though she could not talk

herself, and she just loved to hear him talk of the outside world in his funny little squeaky mouse voice.

Among other things, he used to tell her about the children who came to the glass house, which was really the shop window, you know, to peep and smile at Toinette, who used to smile back at them. She could do this, you know, for smiles mean love, and happiness, and good wishes, whether they are in French or English. But one cold winter night Mousie Grey came in all out of

breath, with a few flakes of snow on his soft grey fur.

"I tell you," he panted, "I'm all tired out. I've been a long way since I saw you last. You see, it was this way. For over a week—in fact, ever since you came to live in this window—I have noticed a little girl who comes every day, as often as she can, to look at you. She is a poor little girl—I knew that by her thin face and old clothes. Why, cold as it was to-day, she had on her head and shoulders only an old thin shawl, and her little hands were blue with cold."



MARJORIE GAZED AT HER PRINCESS

Toinette looked as if she were going to cry, when she suddenly thought that she might spoil her complexion, so she controlled her feelings.

"Well," went on Mousie, "I wanted to see where she lived, and so this afternoon I followed her. Oh, but I had some narrow escapes from cats, but at last we reached the house." Two little tears, no bigger than the point of a pin, rolled down Mousie's little grey cheeks, and he went on:

"The house had only two rooms, and there was so little fire that I had to look twice to see it. The mother was sick in one room; not so very sick, but she needed good food and care.

"Marjorie dear," she called, with some anxiety, did you get the money?"

"'Here it is, mamma.' And she showed her mother a shining quarter.

"It seemed that the mother did sewing, when she could get it, but she had not had much work for a long time, and so they were very, very poor.

"'Now you lie right still, mamma,' Marjorie said. 'I'll soon have supper.' She put on a few sticks of wood, and the little tea-kettle was soon humming; and almost before her mamma knew it, Marjorie took her a nice cup of tea and a roll, with just the tiniest dot of butter.

"Marjorie herself had only a roll and a cup of warm water, with just a little milk in it. Almost before Marjorie had finished her own supper, mamma was

thing as neat as a little girl could, she put on her little shawl, took the precious money, kissed mamma good-bye, and started out to hunt for great bargains. She could get a little meat for soup, half a dozen potatoes, a small loaf of bread, a little butter, and perhaps a nice orange for mamma. She hoped so.

"I will just peep at the Princess," she thought. "I wonder if she is still there. Oh, if anyone has bought you, my beautiful Princess, how lonely I shall feel!" she said, with a half-sob.

But no one had bought Toinette, for there she sat, smiling and beautiful as ever; and she looked out at Marjorie, saying, although no one heard her:



MARJORIE HEARD A LAUGHING VOICE SAY: "JESSIE'S RUNNED AWAY, DADDIE!"

asleep. Then the little housekeeper set the house to rights, and went to a box in the corner and took out her doll. And such a doll! Just an old clothes-pin dressed up; but the way she cuddled it up, and sang to Bella, as she called it!

"Well, I must run away and get a little sleep, or I sha'n't be able to sit up late to-morrow night to nibble the candy." And, with a funny little bow, away Mousie Grey ran.

The next morning Marjorie was up by daylight, for had she not a whole quarter with which to buy a little dinner? Poor little Marjorie! A quarter looked very big to her. As soon as she gave mamma her breakfast, and made every-

"*Bon jour, ma chérie,*" which means, "Good-day, dear."

Oh, how many people there were out on that day! Why, the pavements were crowded, early as it was; and as for the streets, it was very hard work to cross them, there were so many horses and vans and smart carriages out.

Just as Marjorie was looking at Toinette, making up stories in her own little head, about how the beautiful dolly was a lovely princess, and lived in a gorgeous palace made of gold, a carriage drove up.

It was drawn by two shiny black horses, and in the carriage a little golden-haired girl and her papa were sitting.

How different the two little girls looked, one in her velvet and ermine, and the other in her thin little dress, with the faded shawl!

Tenderly did the gentleman lift his precious little daughter to the ground, and, with a merry laugh, they went into the great toy-store, while Marjorie went back to fairyland, and went on weaving her story about Toinette.

She had just reached the place where the Princess was eating her dinner of chicken and honey off ruby plates, when she heard a laughing baby voice say: "Jessie's runned away, daddie! Jessie's runned away!"

And into the middle of the crowded street, in the midst of carriages, horses, and cars, she saw a tiny baby girl run. It was the little princess of the carriage, and with a white face her father rushed after her.

But, quick as he was, Marjorie was quicker, and with a swift rush she had run and seized Baby Jessie from under the very feet of some prancing horses.

How she and Jessie were bundled into that beautiful carriage she hardly knew. But she was driven home in less time than it takes to tell it; and there, in the

poor little house, the mother was told all about how brave her dear little daughter had been.

And before he went, Mr. Webster—that was Jessie's daddie's name—had asked Marjorie's mamma to come and live in his beautiful home and help with the sewing.

"And now, if you can spare this little daughter for an hour, I think we will take her back to the store, for there is one more thing I want to buy," said Mr. Webster.

"If you were going to buy anything for a little girl in this great store, what would you choose?" he asked Marjorie, when they were at the store.

And Marjorie, with a little catch in her voice, said:

"The Princess."

The next night, when Marjorie and her mamma went to Jessie's house, there sat Toinette on a great high chair!

And when Mr. Webster lifted her down and gave her to Marjorie, Marjorie just opened her arms and hugged Toinette up so close that Mousie Grey, who had again made a dangerous journey, laughed and ran home happy, knowing that at last Toinette had found the right mother.

## THE BOY WHO LOST HIS SHADOW

As a little black boy was standing in the sunlight by a pool, his shadow fell on the water and disappeared. He went home without knowing what had happened; but he was very restless, and could not eat or sleep. Fearing that he had fallen ill, his mother watched over him, and when he arose at daybreak and crept out of the house, she followed him quietly.

By the time he reached the pool the sun was shining clearly, and his mother then saw that he had lost his shadow, and she knew that the shadow-eater, must have taken it. He was about to jump into the water, but she stopped him, and carried him home, and let him go out only on moonless nights when he did not feel the loss of his shadow. But how

was she to get his shadow back? That was what puzzled her. At last she made a clay figure, and stood it by the pool one sunny morning, and let its reflection fall on the water.



HE WAS ABOUT TO JUMP INTO THE WATER

The shadow-eater tried to seize the shadow, but as it was not the shadow of a living creature he was unable to capture it. He was filled with fear, and began to think that the woman was a witch who had destroyed his powers for all time.

"Give me back my boy's shadow, and I will leave you in peace," said the woman to him.

The shadow-eater, who was in a terrible state of fear, at once gave her what she wanted, and then, being afraid that she would do him more mischief still, he left the pool, and was never seen there again.



## THE MAN WHO DROVE DOWNSTAIRS

ON a high hill on the west bank of the River Danube stands the Royal Palace of the kingdom of Hungary, surrounded by the ancient city of Buda, and looking across the river at the twin city of Pesth. These two cities were united in the year 1873, and we know them as Budapesth, the capital of Hungary.

In a splendid mansion hard by the Royal Palace there lived, in the beginning of the nineteenth century, one Count Sandor, a nobleman who was the proud owner of a large number of the finest horses in the country. The Hungarians have always been famed for their skill as horsemen, but Count Sandor excelled his fellow-countrymen in riding and driving his splendid steeds.

Eccentric and reckless, the count would engage in the most daring and dangerous feats, forcing his horses to plunge down from rocky heights, and to clamber up almost perpendicular cliffs. When the ice of the Danube was breaking up he would cross the river from shore to shore, jumping from ice floe to ice floe. Leaping fences and walls, streams and chasms, was as nothing to this intrepid rider, and he would even leap over moving carriages at a single bound.

The guests of Count Sandor had need to be fearless, too, for they never knew on what strange coaching expedition their host might take them, or what strange pranks his horses would play them; for the count trained his horses to send their riders flying over their heads, a most unpleasant, and often dangerous, surprise for inexperienced

riders. One of the count's most reckless exploits occurred one day in the year 1827. Accompanied by a German artist, named John Presstel, and a footman, he set out from his mansion in an open carriage drawn by four of his finest horses. The winding street leading down from the rocky citadel ran past a steep flight of stone steps, which had been built to save the dwellers in the lower town a long, winding journey up to the centre of the town.



THE COUNT DROVE HEADLONG DOWN THE STEPS

Suddenly as they were about to pass the head of this staircase, the count turned aside the leading pair of his four-in-hand, and drove team and carriage and all headlong down the stone staircase. Artist and footman held their breath, and clung hard to the sides of the carriage as the wheels bumped down the hard steps, wondering, doubtless, if the wheels would stand such a succession of violent shocks, and amazed at the hardihood of the driver. He, calm and collected, skilfully guided his horses, and the strong and sure-footed animals held on their course, and reached the street below with-

out accident. Only when the roadway had been safely reached, and the four splendidly trained animals were prancing gaily along the level ground once more, did the two passengers breathe freely. The artist, John Presstel, often sketched the daring feats of horsemanship of the count, and he added a sketch of this incident to the collection of curious and striking pictures, which has been preserved for many years, and is now known as the Sandor Album.

## THE BOX THAT SPEAKS TO US

IN a little room in London, with a row of ugly windows looking out on the dripping telegraph wires and the smoky roofs and chimneys of the City Road, is gathered a company of people. One is the great singer, Madame Melba; another is the celebrated violinist, Herr Kubelik; a third is the famous accompanist, Mr. Landon Ronald.

One of the walls of this room is a partition of wood and frosted glass. In the centre of it a brass trumpet projects into the room. Close to this trumpet there is a tall stage of rough wood, and on this stage stands a cottage piano.

Mr. Landon Ronald climbs to the stage, and seats himself before the piano. Kubelik places his violin under his chin; Madame Melba stands in front of the trumpet. All conversation ceases. Everybody is very still. Then a bell rings.

Mr. Ronald begins to play the piano. In a moment Madame Melba is singing. Presently the violin of Kubelik sends its glorious tones mingling with the voice and the piano. What is happening?

All these *movements*—the movement of Melba's lips and throat, the movement of Mr. Ronald's hands, the movements of Kubelik's bow—are passing from this little room in the city of London into the distant ages of the future. The people in the room hear them, but it is only for a swift moment; they rush on, like an arrow, like a train flying through the country, away from To-day, away from the Present, into the invisible and unknown world of To-morrow and For Ever.

These movements of which we have spoken have an effect upon the atmosphere. If a person sweeps a fan in front of our face, we feel on the skin a motion of the air. The movement of the lips has an identical effect; they set up a motion in the air, they make the air vibrate. When Melba's lips form the word "Home," they send not that printed word into our ears, but only vibrations of the air, vibrations of sound; and in our own minds we convert these vibrations of sound into the word "Home."

And now to-day all the vibrations of sound made by the singer's voice, the violin, and the piano, mingle in one continuous and varying undulation, enter the brass trumpet, as well as the ears of the little listening company; and the trumpet receives on the other side of the

partition a force of sound which moves a silver needle exactly as the vibrations move the drum of the ear. The little silver needle at the end of the brass trumpet moves with the waves of air, and its movements are the movements of a writer. That needle is the secretary of posterity. It is writing down the song for people not yet born—people who will live in five hundred or a thousand years. If there had been gramophones in the earliest ages, we might now listen to the movement of Homer's lips, and hear the passionate cry of John the Baptist: "Repent, for the kingdom of heaven is at hand!"

Under the silver needle there is a revolving plate made of some wax-like composition, which receives in almost invisible lines the pressure of the needle's point. When the song is finished, or the needle ceases to move, the plate is taken from under the needle, and carried to skilful workmen, who copy the spider lines of the needle on a diagram of metal. This metal diagram is the master-record; from this may be made as many copies as are needed. In a thousand years' time men and women will pay to get copies of it.

When the song which the people listen to in the City Road, this foggy morning, has been *transferred*—think of it!—from the composition plate to the metal diagram, and conveyed from the metal diagram to the vulcanite record which we may buy for a few quarters—it will be placed, in all the cities of the world and down all the ages yet to be, on the machine called a gramophone, and will be reproduced exactly as it was sung.

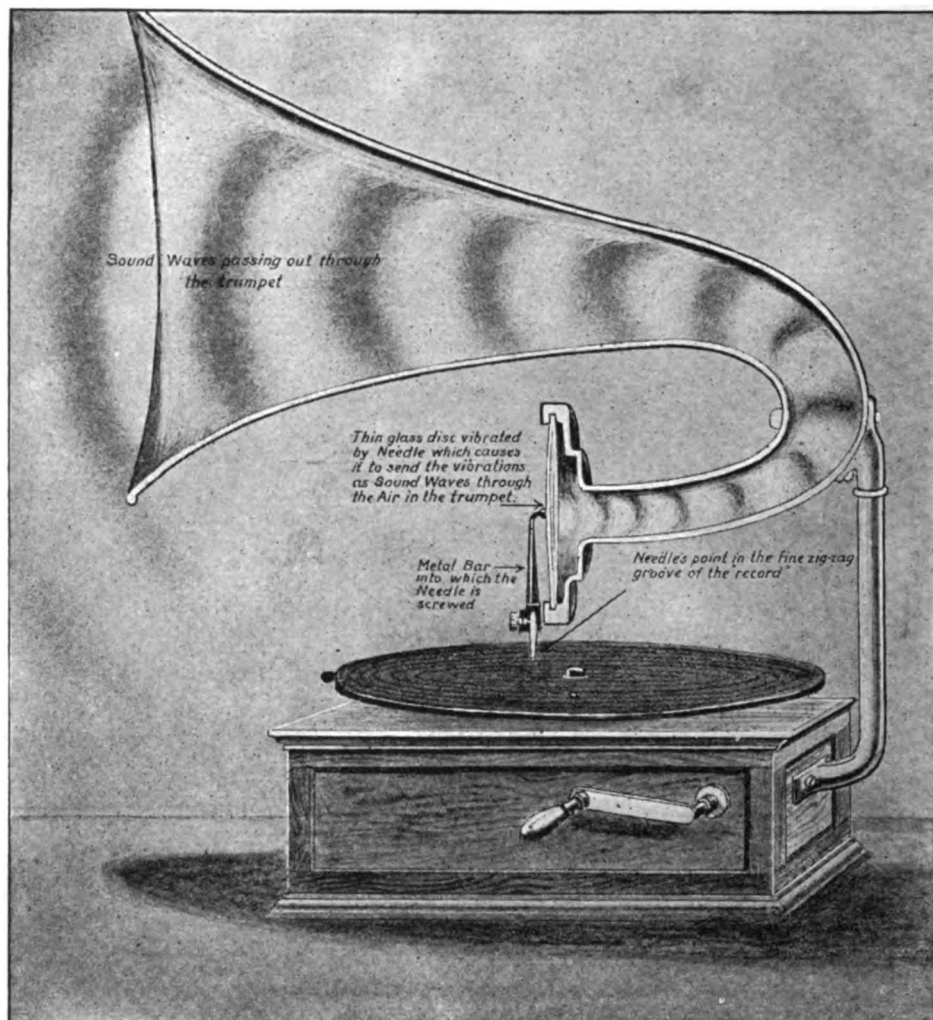
A little needle will pass over the disc as it revolves on this machine, the scratches on the disc will set the needle vibrating, the vibrations will strike upon the tiny mechanism just above the needle called the voice-box or sound-box, and, leaving the sound-box, these vibrations will issue from the trumpet as the very song sung in the City Road.

*Words* will come from the trumpet!

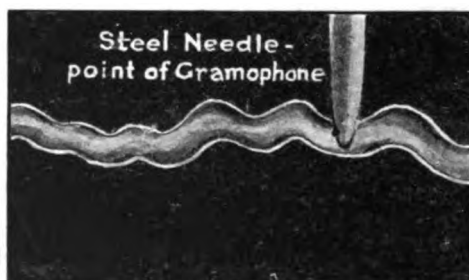
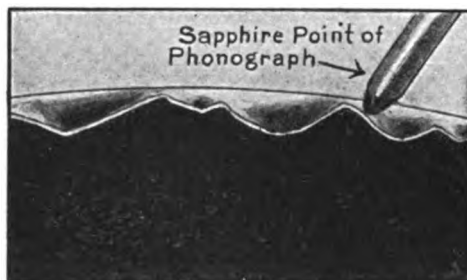
The wonder of this fact is overwhelming to our understanding. It is a miracle. How is it that the dead mechanism of that simple sound-box converts these vibrations, these little hurried jerks of the needle, not merely into sounds, but into actual *words*?

It is a thing that no man knows.

# THE MACHINE THAT TALKS AND SINGS



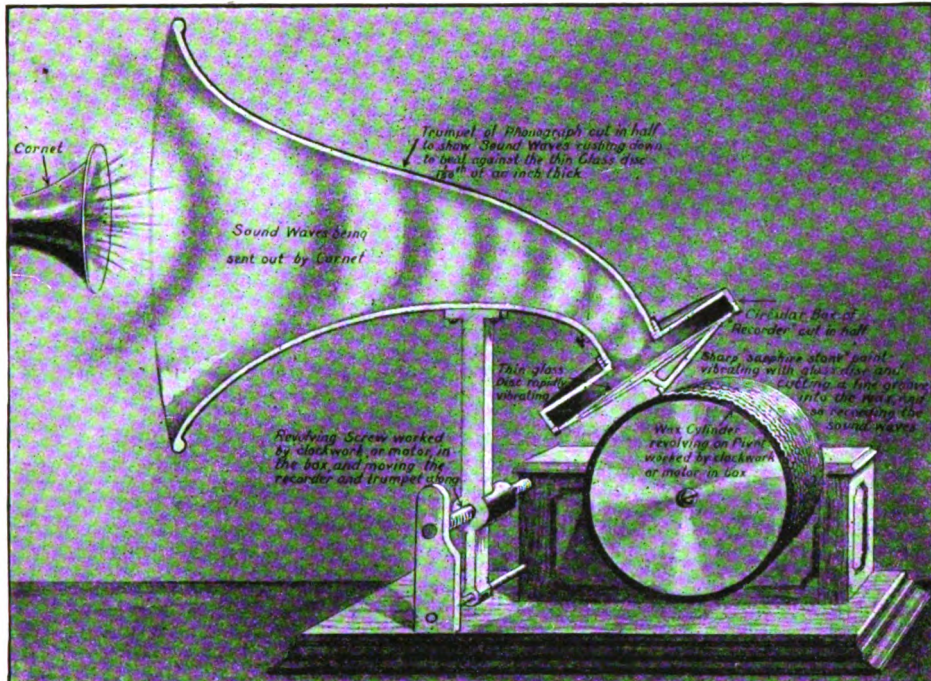
A box that can talk seems a miracle ; yet we have all heard a box speak. The pictures on these pages show how it is done. This picture shows the gramophone talking. A little needle moves in the zigzag curve of a disc made of vulcanite, and as the needle vibrates it shakes a glass disc and sends into the trumpet waves of air corresponding to the sounds of words. The best gramophones are now being made without trumpets.



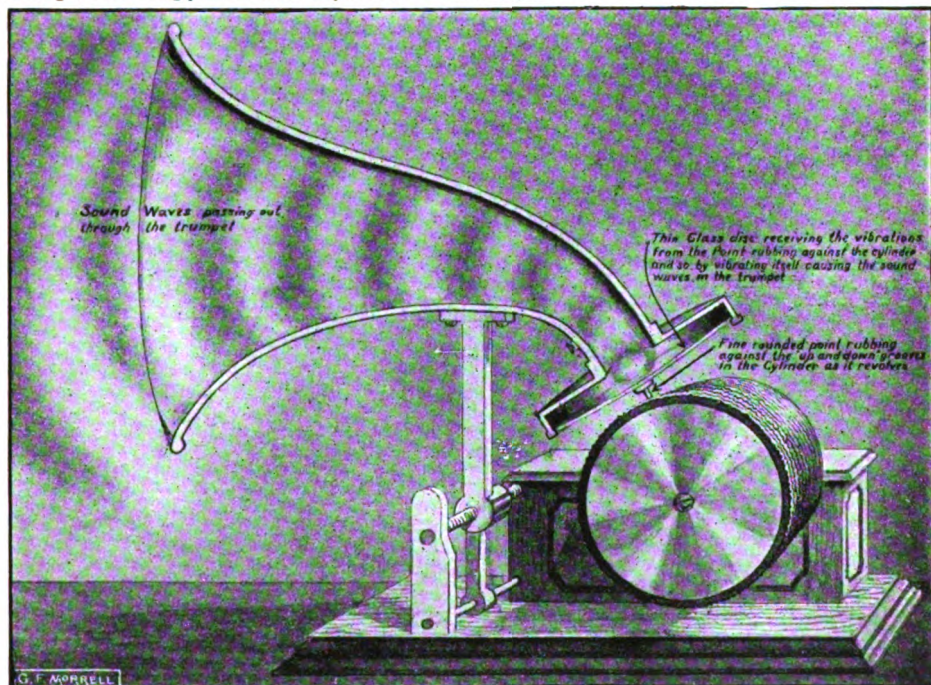
These two pictures show the making of gramophone and phonograph records. The gramophone record is made by speaking or singing into the trumpet, the waves of air made by the voice vibrating a needle, which makes deep marks on a vulcanite disc. In the phonograph, the needle digs into the wax of a cylinder, and the record is up and down, like hills and valleys, as shown on the left. But for the gramophone the record is zigzag, like a winding river, as shown on the right. These little marks are among the most wonderful things in the world, and will carry the voices of living people right down the ages so that they will be heard in a thousand years' time.



# HOW THE PHONOGRAPH GETS ITS VOICE



Here a record is being made upon the wax cylinder of a phonograph, as explained on the opposite page. We simply reverse the process of making the machine talk, using the phonograph itself for this purpose. But to make gramophone records the gramophone itself cannot be used. A specially constructed machine has to be used, causing the recording point to make a spiral course in one line from the circumference of the disc to the centre.



In this picture we see the phonograph talking, a process exactly the reverse of that shown above. The continuous line on the record is very fine indeed, and on some records there are no fewer than 250 turns of this continuous line to a single inch. In a ten-inch gramophone record, the groove of the record is as much as a fifth of a mile long.

# The Child's Book of SCHOOL LESSONS



READING CLUB

## FOREIGN WORDS AND PHRASES

IN written and spoken English many words and phrases are

CONTINUED FROM 5649

used that are not English at all. A great number of such words and phrases are used because they express the meaning of the writer, or speaker, better than any English words or phrases that he could use. Examples of this class are *chic*, *de trop*, and *ad nauseam*. Others are legacies from the time when our laws were composed in Latin, such as *ad referendum*, and many Church phrases have come to us from the time when the language of the Church was Latin, like *Dei gratia*. Others, such as *et tu Brute*, were the sayings of famous men

upon memorable occasions. For whatever reason they have come

to be used in speaking or writing in English, they are interesting as showing how language grows, and how one language borrows words from other languages. A very great part of the recognised English language has been borrowed in this way from French and other sources, and, unless we study the subject very closely, we are apt to forget that these words originally were anything but English. We should try to understand all that we read, and the following table explains the most familiar of the foreign phrases that we come across in papers and books.

Ab ante—From before : Latin.	Ad die—From that day : Latin.	Affaire d'amour—A love affair : French.
À bas—Down, or down with : French.	Ad infinitum—To infinity ; and so on for ever ; often written ad inf. : Latin.	Affaire de cœur—An affair of the heart : French.
Ab initio—From the beginning ; frequently written ab init. : Latin.	Ad initium—At or to the beginning ; often written ad init. : Latin.	Affaire d'honneur—An affair of honour ; frequently used of a duel : French.
Ab intra—From within : Latin.	Ad interim—In the meantime ; often written ad int. : Latin.	À gauche—To the left : French.
À bon marché—Cheap : French.	Ad libitum—At pleasure ; usually written ad lib. : Latin.	Aîné, aînée—Senior : French.
Absit—Let him be absent : Latin.	Ad locum—At the place ; frequently written ad loc. : Latin.	À la carte—According to the bill of fare : French.
Ad avisandum—Literally, to be considered ; used principally in Scotland to indicate that judgment in a trial is reserved : Latin.	Ad manum—At hand ; ready : Latin.	À la mode—In the fashion : French.
À demi—By halves : French.	Ad nauseam—To the point of loathing : Latin.	À la mort—To the death : French.
Ad finem—To the end ; usually written ad fin. : Latin.	Ad referendum—To be further considered : Latin.	À l'anglaise—In English style : French.
Ad hoc—For this (end) : Latin.	À droite—To the right : French.	Al fresco—In the open air : Italian.
Ad hunc locum—At this place ; usually written ad h. l. : Latin.	Adsum—I am here : Latin.	Alma mater—Literally, kind mother ; applied to the university that a student has attended : Latin.
	Ad valorem—According to value ; frequently written ad val. : Latin.	



À l'outrance—A frequently-made error for à outrance : French.  
 Alter ego—Literally, other self ; used sometimes for a bosom friend and sometimes for someone else with a close resemblance : Latin.  
 Alter idem—Another of the same : Latin.  
 Altesse—Highness : French.  
 A majori ad minus—From the greater to the less ; sometimes the last two words are omitted : Latin.  
 À merveille—Wonderfully : French.  
 A minori ad majus—From the less to the greater ; the last two words are frequently omitted : Latin.  
 À mon avis—In my opinion : French.  
 Amor vincit omnia — Love conquers all things : Latin.  
 Amour propre—Self-esteem : French.  
 Ancien régime—The old order of things : French.  
 Anno domini—In the year of our Lord ; usually written A.D. : Latin.  
 Anno mundi—In the year of the world ; usually written A.M. : Latin.  
 Annus mirabilis—Year of wonders : Latin.  
 Ante bellum—Before the war : Latin.  
 Ante Christum — Before Christ ; frequently written A.C., but B.C. is more common : Latin.  
 Ante meridiem—Before noon : Latin.  
 À outrance—To the bitter end : French.  
 Apologia—Apology : Greek.  
 A posteriori—From effect to cause : Latin.  
 Appartement—A suite of rooms ; a flat : French.  
 A priori—From cause to effect : Latin.  
 Aqua fortis—Strong water ; the name given to nitric acid, which dissolves nearly all metals except gold and a few other precious metals : Latin.  
 Aqua regia—Literally, royal water, applied to a mixture of nitric and hydrochloric acids, which dissolve gold when mixed, but do not do so singly : Latin.  
 Aqua vitæ—Water of life: Latin  
 Ars longa, vita brevis—Art is long, life is short : Latin.  
 À toute force—By all means : French.  
 À tout prix—At any price : French.

À travers—Across : French.  
 Au contraire—On the contrary : French.  
 Au courant—Fully informed : French.  
 Au fait—Well acquainted : French.  
 Au fond—To the bottom : French.  
 Auf Wiedersehen — Till we meet again : German.  
 Au plaisir de vous revoir—Till I have the pleasure of seeing you again : French.  
 Au revoir—Until we meet again : French.  
 Autres temps, autres mœurs—Other times, other manners : French.  
 Aux armes—To arms : French.  
 Avant-coureur — Forerunner : French.  
 Ave, Cæsar, morituri te salutant—Hail, Cæsar, those about to die salute thee ; the greeting of the gladiators : Latin.  
 Ballon d'essai—A trial balloon ; a " feeler " : French.  
 Belles-lettres—Literally, fine letters ; elegant literature, poetry, fiction, and criticism : French.  
 Belle vue—Fine view or prospect : French.  
 Bête noir—Black beast ; pet aversion : French.  
 Bien—Well : French.  
 Bien-aimé—Well - beloved : French.  
 Bis—Twice ; again : French.  
 Bona fide—In good faith : Latin.  
 Bona fides—Good faith : Latin.  
 Bonhomie — Good nature : French.  
 Bon jour—Good morning : French.  
 Bon marché—Cheap, a good bargain : French.  
 Bonne foi — Good faith : French.  
 Bon soir — Good evening : French.  
 Bon ton—The height of fashion : French.  
 Bon vivant—Good liver ; jolly fellow : French.  
 Bon voyage — A pleasant journey : French.  
 Bourse — Stock Exchange : French.  
 Café au lait—Coffee with milk : French.  
 Café noir—Black coffee ; coffee without milk : French.  
 Cap-à-pie—From head to foot : Old French.  
 Carte blanche—Literally, a white card ; full powers to act : French.  
 Casus belli—Reason for war : Latin.

Cause célèbre — Famous trial : French.  
 Cave canem—Beware of the dog : Latin.  
 Centum—A hundred ; generally written cent. : Latin.  
 C'est à-dire—That is to say : French.  
 C'est magnifique, mais ce n'est pas la guerre—It is magnificent, but it is not war ; the historic saying of a French General who witnessed the charge at Balaclava : French.  
 Chemin de fer—Railway : French.  
 Cherchez la femme—Look for the woman ; there is a woman at the bottom of it : French.  
 Chic—Stylish : French.  
 Cogito, ergo sum—I think, therefore I am ; the famous proposition of the French philosopher Descartes : Latin.  
 Coiffeur—Hairdresser: French.  
 Comme il faut—As it ought to be ; gentlemanly or lady-like : French.  
 Compos mentis—Of sound mind ; sane : Latin.  
 Concours — Competition : French.  
 Contretemps—An inopportune happening ; a hitch : French.  
 Corps diplomatique—Diplomatic body : French.  
 Coup d'état—An unexpected stroke of policy : French.  
 Coup de grâce — Finishing stroke : French.  
 Crème de la crème—Cream of the cream : French.  
 Cul-de-sac—Literally, bottom of the sack ; a street open only at one end : French.  
 Cum grano salis—With a grain of salt ; with some allowance for exaggeration : Latin.  
 De die in diem—From day to day : Latin.  
 De facto—From the fact ; actual : Latin.  
 Dei gratia—By the grace of God ; frequently written D.G. : Latin.  
 Déjeuner—Lunch : French.  
 De novo—Anew : Latin.  
 Deo gratias—Thanks to God : Latin.  
 De profundis—Out of the depths : Latin.  
 De rigueur — Indispensable : French.  
 De trop—Too much or too many ; intrusive : French.  
 Deus ex machina—Literally, a god from the machine ; an apparent forced method or device in a plot : Latin.

**Deus vult**—God wills it; the battle - cry of the Crusaders : Latin.

**Dies irae**—The day of wrath; the Judgment Day : Latin.

**Dieu défend le droit**—God defends the right : French.

**Dieu et mon droit**—God and my right; the motto on the Royal arms of the British Sovereign : French.

**Dit**—Called, said : French.

**Dolce far niente**—Sweet do-nothing : Italian.

**Domine, dirige nos**—Lord, guide us; the motto of London : Latin.

**Donnerwetter** — Thunderstorms; used as an ejaculation, as, for instance, "Great Scott," in English : German.

**Double entente** — Double meaning : French.

**Dramatis personæ**—Characters in a play : Latin.

**Dulce "domum"** — Sweet "homewards"; from a Winchester school song : Latin.

**Dum spiro, spero**—While I breathe, I hope : Latin.

**Eau sucrée**—Sugared water : French.

**Ecce homo**—Behold the man ! The expression used by Pilate when Christ appeared before the mob; also the title of a book by Sir J. R. Seeley, and of famous paintings by Corregio and by Guido Reni : Latin.

**Edition de luxe**—A luxurious and expensive edition of a book : French.

**Eisen und Blut**—Bismarck's famous phrase, meaning iron and blood : German.

**El dorado**—Golden land : Spanish.

**Embonpoint**—Stout or stoutness; literally, in good form : French.

**Emeritus**—Retired; generally applied to a professor : Latin.

**En attendant**—In the meantime : French.

**En avant**—Forward : French.

**En déshabillé**—In undress : French.

**En évidence**—Conspicuous : French.

**En famille**—In the family circle : French.

**Enfant terrible**—Literally, terrible child; used of a child who says indiscreet things that annoy or confuse his elders : French.

**En fête**—On holiday : French.

**En masse**—In a body : French.

**En passant**—In passing : French.

**En route**—On the road : French.

**En suite**—In succession; frequently misused by being made to mean "to match" : French.

**Entente cordiale**—Good international understanding; particularly applied to British and French national friendship : French.

**Entourage** — Surroundings; followers : French.

**En tout cas**—In any case; also a sun-shade : French.

**Entre nous**—Between ourselves : French.

**Entrez**—Come in : French.

**Errare est humanum**—To err is human : Latin.

**Et alia**—And other things; generally written *et al.* : Latin.

**Et alii**—And other persons; generally written *et al.* : Latin.

**Et cetera**—And so on; and other things; usually written *etc.* : Latin.

**Et tu, Brute**—And you, Brutus; Cæsar's exclamation when he saw his friend Brutus among his assassins : Latin.

**Eureka**—I have found it; discovered at last : Greek.

**Ewigkeit**—Eternity : German.

**Ex cathedra**—Literally, from the chair; judicially or officially : Latin.

**Excelsior**—Higher : Latin.

**Exempli gratia**—For example; frequently written *e.g.* : Latin.

**Exeunt omnes**—All go out : Latin.

**Ex libris**—From the books; usually followed by the name of a person in the possessive case : Latin.

**Ex nihilo nihil fit**—From nothing comes nothing : Latin.

**Ex officio**—Officially : Latin.

**Ex parte**—On one side; biassed : Latin.

**Extra muros**—Beyond the walls : Latin.

**Facile princeps**—Easily first : Latin.

**Facta non verba**—Deeds, not words : Latin.

**Factum est**—It is done : Latin.

**Fait accompli**—An accomplished fact : French.

**Far niente**—Doing nothing : Italian.

**Faux pas**—A false step or mistake : French.

**Felo de se**—Suicide : Latin.

**Femme de chambre**—Lady's maid : French.

**Fidei defensor**—Defender of the Faith : Latin.

**Foie gras**—Fat liver; fat goose livers are made into *paté de foie gras* : French.

**Fortiter, fideliter, feliciter**—Firmly, faithfully, felicitously : Latin.

**Fortiter in re, suaviter in modo**—Forcibly in deed, gently in manner : Latin.

**Fra**—Brother; the title of a friar : Italian.

**Front à front**—Face to face : French.

**Gamin**—Street urchin; ragamuffin : French.

**Garçon**—Boy; waiter : French.

**Gardez**—Take care : French.

**Gloria in excelsis**—Glory to God in the highest : Latin.

**Gloria Patri**—Glory be to the Father : Latin.

**Grâce à Dieu**—Thanks to God : French.

**Hic est**—This is; generally written *h.e.* : Latin.

**Hic et ubique**—Here and everywhere : Latin.

**Hic jacet**—Here lies; frequently written *h.j.* : Latin.

**Hic requiescat in pace**—Here rests in peace; frequently written *h.r.i.p.* : Latin.

**Hier spricht man Deutsch**—German spoken here : German.

**Hoc anno**—In this year : Latin.

**Hoc est**—That is; generally written *h.e.* : Latin.

**Hoch**—Your health, in proposing a toast : German.

**Hominis est errare**—To err is the lot of man : Latin.

**Homme d'affaires**—Man of business : French.

**Homme de lettres**—Man of letters : French.

**Homme d'esprit**—Man of wit : French.

**Homme du monde**—Man of fashion : French.

**Honi soit qui mal y pense**—Shame be to him who thinks ill of it—the motto of the Order of the Garter : French.

**Horribile dictu**—Horrible to relate : Latin.

**Hors de combat**—Out of the fight; disabled : French.

**Hôtel de ville**—Town or city hall : French.

**Hôtel Dieu**—God's house; hospital : French.

**Humanum est errare**—To err is human : Latin.

**Ibidem**—In the same place, or in the same case : Latin.

**Ich dien**—I serve; the motto of the Prince of Wales : German.

**Ici on parle français**—French spoken here : French.

**Idem**—The same : Latin.

**Idem quod**—The same as; frequently written *i.q.* : Latin.

**Id est**—That is; generally written *i.e.* : Latin.

- Impasse**—An insuperable obstacle ; a sticking point : French.
- Impedimenta**—Luggage ; army baggage : Latin.
- Imperium in imperio**—A state within a state : Latin.
- In articulo mortis**—At the point of death : Latin.
- In camera**—In private : Latin.
- Incognito**—Privately ; under an assumed name ; generally written *incog.* : Italian.
- In Dei nomine**—In the name of God ; frequently written *I.D.N.* : Latin.
- Index expurgatorius**—List of forbidden books : Latin.
- In Domino**—In the Lord : Latin.
- In extremis**—At the point of death : Latin.
- In forma pauperis**—As a pauper : Latin.
- Infra**—Below ; often written *inf.* : Latin.
- In loco parentis**—In the place of a parent : Latin.
- In memoriam**—In memory : Latin.
- In pace**—In peace : Latin.
- In posse**—Within the range of possibility : Latin.
- In propria persona**—In person : Latin.
- In re**—In the matter of ; concerning : Latin.
- In situ**—In its original place : Latin.
- In statu quo**—In the former state : Latin.
- Inter alia**—Among other things : Latin.
- Inter alios**—Among other persons : Latin.
- Inter nos**—Between ourselves : Latin.
- Inter se**—Among themselves : Latin.
- In toto**—Entirely : Latin.
- Ipsè dixit**—His mere statement ; literally, he himself said it : Latin.
- Ipsissima verba**—The very words : Latin.
- Ipo facto**—Virtually : Latin.
- Jeu de mots**—A pun ; literally, a play on words : French.
- Jeu d'esprit**—A witticism : French.
- Labore et honore**—By labour and honour : Latin.
- Lapsus linguæ**—Slip of the tongue : Latin.
- Lares et penates**—Household gods ; used of household effects, such as furniture : Latin.
- Laus Deo**—Praise to God : Latin.
- Le beau monde**—The world of fashion : French.
- Le grand monarque**—The great monarch, Louis XIV. : French.
- Le roi le veut**—The king wills it ; the words in which the King of Great Britain gives his assent to a Law passed by Parliament : Norman French.
- Lèse majesté**—Literally, injured majesty ; an offence of disrespect constituting a mild form of treason : French.
- L'état, c'est moi**—I am the state ; a saying of Louis XIV. : French.
- Liberté, égalité, fraternité**—Liberty, equality, fraternity ; the motto of the French Republic : French.
- Locum tenens**—Literally, holding the place ; a temporary substitute : Latin.
- Locus standi**—Standing place ; right to interfere : Latin.
- Loquitur**—Speaks ; frequently written *loq.* : Latin.
- Ma chère**—My dear : French.
- Ma foi**—My faith : French.
- Magnum bonum**—A great good : Latin.
- Magnum opus**—A great work : Latin.
- Mal à propos**—Unsuitable ; out of place : French.
- Mal de mer**—Sea-sickness : French.
- Mandamus**—Literally, we command ; used to indicate an order made by a higher court to a lower : Latin.
- Materfamilias**—The mother of a family : Latin.
- Materia medica**—The science that studies the remedies used in medicine : Latin.
- Memorabilia**—Things to be remembered : Latin.
- Mens sana in corpore sano**—A sound mind in a sound body : Latin.
- Mésalliance**—A marriage between two people of different social positions : French.
- Meum et tuum**—Mine and thine : Latin.
- Mirabile dictu**—Wonderful to tell : Latin.
- Mirabilia**—Wonderful things : Latin.
- Mise en scène**—Stage get-up : French.
- Modus**—Manner : Latin.
- Modus operandi**—Mode of operation : Latin.
- Modus vivendi**—Literally, a way of living ; a settlement or compromise between opposite parties in a dispute : Latin.
- Mon ami**—My friend : French.
- Mon cher**—My dear : French.
- Multum in parvo**—Much in little : Latin.
- Née**—Born ; the expression "Mrs. Smith née Jones" indicates that Jones was Mrs. Smith's name before marriage : French.
- Nemine contradicente**—With no one opposing ; often written *nem. con.* : Latin.
- Ne plus ultra**—Nothing further : Latin.
- Nil desperandum**—Never despair : Latin.
- Noblesse oblige**—Rank has obligations : French.
- Nolens volens**—Willing or unwilling : Latin.
- Nom de guerre**—Literally, war name ; assumed name : French.
- Nom de plume**—Literally, pen name ; name assumed by a writer. The words are French, but the expression is not good French idiom : French.
- Non compos mentis**—Not of sound mind : Latin.
- Non sequitur**—A wrong conclusion : Latin.
- Nota bene**—Note well ; usually written *N.B.* : Latin.
- Notre Dame**—Our Lady ; the Virgin Mary : French.
- Nouveaux riches**—Newly rich ; upstarts : French.
- Nulli secundus**—Second to none : Latin.
- Obiit**—He, or she, died : Latin.
- Obiter**—By the way : Latin.
- Obiter dictum**—A cursory remark (plural, *dicta*) : Latin.
- Octroi**—Duties collected at the gates of a city or town : French.
- Œil de bœuf**—A bull's-eye ; a small circular window : French.
- Œuvres**—Works : French.
- Omnia vincit amor**—Love conquers all : Latin.
- On dit**—They say ; a flying rumour : French.
- Ora et labora**—Pray and work : Latin.
- Ora pro nobis**—Pray for us : Latin.
- O tempora ! O mores**—Literally, Oh, times ! Oh, manners ! What sad times ! What awful doings : Latin.
- Pace tua**—By your leave : Latin.
- Par excellence**—By excellence ; superb : French.
- Par exemple**—For example : French.
- Pari passu**—Literally, with equal pace ; together : Latin.
- Parvenu**—Literally, arrived ; an upstart : French.

- Paterfamilias**—Father of a family : Latin.  
**Pater patriæ**—Father of his country : Latin.  
**Per annum**—By the year ; frequently written *per an.* : Latin.  
**Per centum**—By the hundred ; also written *per cent.*, *p.c.*, or *%* : Latin.  
**Pièce de résistance**—Literally, piece of or for resistance ; the chief course at a dinner : French.  
**Pied - à - terre**—Temporary lodging : French.  
**Pinxit**—Painted : Latin.  
**Pis aller**—Literally, worst go ; a makeshift : French.  
**Pleno jure**—With full powers : Latin.  
**Pons asinorum**—Literally, the bridge of asses ; usually applied to Euclid i. v. : Latin.  
**Poste restante**—A department in a post-office where letters lie till called for by the person to whom they are addressed : French.  
**Post mortem**—After death : Latin.  
**Post obitum**—After death : Latin.  
**Postscriptum**—Written after ; generally written *p.s.* : Latin.  
**Pot pourri**—A mixture of dried flowers : French.  
**Pour prendre congé** or *p.p.c.*—To take leave : French.  
**Presto**—Quick : Italian.  
**Prima facie**—On the first view : Latin.  
**Primo**—In the first place : Latin.  
**Pro and con**—For and against : Latin.  
**Pro forma**—As a matter of form : Latin.  
**Pro patria**—For our country : Latin.  
**Pro rata**—In proportion : Latin.  
**Prosit**—Your health, in drinking a toast : German.  
**Pro tempore**—For the time ; frequently written *pro tem.* : Latin.  
**Proximo**—Next ; generally written *prox.* : Latin.  
**Quid pro quo**—Literally, what for what ; value for value, or value in return : Latin.  
**Qui s'excuse, s'accuse**—He who excuses himself accuses himself : French.  
**Quod erat demonstrandum**—Which was to be proved : Latin.  
**Quod erat faciendum**—Which was to be done : Latin.  
**Quod vide**—Which see ; generally written *q.v.* : Latin.  
**Quo vadis**—Whither goest thou : Latin.  
**Raison d'être**—Reason for being : French.  
**Rara avis**—A rare bird ; a curiosity : Latin.  
**Reductio ad absurdum**—Proof by proving the ridiculousness of the contrary : Latin.  
**Répondez, s'il vous plaît**—Reply, if you please : French.  
**Requiescat in pace**—May he rest in peace : Latin.  
**Ruse de guerre**—Stratagem : French.  
**Rus in urbe**—Country in the city : Latin.  
**Sancta simplicitas**—Child-like simplicity : Latin.  
**Sanctum sanctorum**—Holy, of holies : Latin.  
**Sang froid**—Literally, cold blood ; indifference : French.  
**Sans cérémonie**—Without ceremony ; informal : French.  
**Sans culottes**—Breechless ; a name given to some agitators at the beginning of the French Revolution : French.  
**Sans peur et sans reproche**—Without fear and without reproach ; the phrase used to describe the Chevalier Bayard (about whom we have read) : French.  
**Sartor resartus**—The tailor reclothed ; the name of a book by Carlyle : Latin.  
**Savoir-faire**—Tact : French.  
**Semper eadem, or semper idem**—Always the same : Latin.  
**Sequentes, or sequentia**—The following ; generally written *seq.* : Latin.  
**Seriatim**—One after another : Latin.  
**Sic transit gloria mundi**—Thus passes worldly glory : Latin.  
**Sine die**—Without day ; indefinitely ; frequently written *s.d.* : Latin.  
**Sine qua non**—Without which not ; an essential : Latin.  
**Soi-disant**—Self-styled ; pretended : French.  
**Status quo, or status quo ante**—The existing or former condition : Latin.  
**Sturm und Drang**—Storm and stress : German.  
**Suaviter in modo, fortiter in re**—Gentle in manner, strong in action : Latin.  
**Sub judice**—Under consideration, or in course of trial : Latin.  
**Sub pœna**—Under a penalty : Latin.  
**Sub rosa**—Under the rose ; privately : Latin.  
**Sub voce**—Under the word ; as, for example, under the word in a dictionary or encyclopædia : Latin.  
**Sui generis**—Of its own species ; peculiar : Latin.  
**Summum bonum**—The highest good : Latin.  
**Supra**—Above : Latin.  
**Tableau vivant**—Living picture : French.  
**Tempus fugit**—Time flies : Latin.  
**Terra incognita**—An unknown country : Latin.  
**Tête-à-tête**—Literally, head to head ; a private conversation between two : French.  
**Tour de force**—A feat : French.  
**Tu quoque, Brute**—And thou, too, Brutus ; the same as *et tu, Brute* : Latin.  
**Ultima thule**—The farthest boundary : Latin.  
**Ultimo**—Last ; usually written *ult.* : Latin.  
**Ultra vires**—Beyond one's power : Latin.  
**Vade mecum**—Go with me ; a constant companion : Latin.  
**Veni, vidi, vici**—I came, I saw, I conquered ; Cæsar's famous saying : Latin.  
**Verbum sapienti sat est**—A word to the wise man is sufficient ; often contracted to *verb sap.* : Latin.  
**Versus**—Against ; often written *v.* : Latin.  
**Via**—By way of : Latin.  
**Via media**—A middle course : Latin.  
**Vice**—In place of : Latin.  
**Vice versa**—Transposed : Latin.  
**Videlicet**—Namely ; usually written *viz.* : Latin.  
**Virginibus puerisque**—For girls and boys ; the name of one of Ruskin's books : Latin.  
**Vis-à-vis**—Face to face : French.  
**Vita brevis, ars longa**—Life is short, art is long : Latin.  
**Viva voce**—By oral testimony : Latin.  
**Vive la république**—Long live the republic : French.  
**Vive l'empereur**—Long live the emperor : French.  
**Voilà**—There is : French.  
**Volente Deo**—God willing : Latin.  
**Volo, non valeo**—I am willing, but unable : Latin.  
**Vox populi, vox Dei**—The voice of the people is the voice of God : Latin.

# GENERAL INDEX TO THE BOOK OF KNOWLEDGE

For titles of poems or first lines see Special Index following the General Index. Author's names are in both.

**THIS** Index, containing about twenty-three thousand entries, will enable you to find very quickly everything contained in The Book of Knowledge. It is not arranged exactly like an ordinary index, for the Book of Knowledge is not like any other book in the world. The book does not contain all the accumulated knowledge of the ages, but *those things which it is most important to know*, arranged so that they can be quickly and easily understood. Like an ordinary index, it is arranged alphabetically. In addition a number of the most important departments of knowledge in our index have special indexes of their own.

Many subjects are indexed twice or even three times. For example, you wish to know something about the Sun: look for the word and you will find dozens of references to the Sun and its work. Under **THE BOOK OF THE EARTH** you will find the story of the Sun and the Earth together. You will find Hockey in its place under the letter *H* and also under *Games*. You will have little trouble if you think for a second before you look.

The Special Poetry Index will prove a great help. The names of the authors are in the Great Index under their proper letters. They are also found in the Special Index and under each name are the titles of the poems by that author. Suppose you do not know an author's name: the titles of the poems and the first lines are given in their proper place according to the first letter of the first word, except that *A*, *An* and *The* are not considered words.

The book contains nearly ten thousand pictures, and, of course, only the most important could be indexed separately, but you will have little trouble in finding what you want. For instance, you wish to see a picture of General Lee or of General Grant: You know that they fought in the great Civil War: Under the subject-heading **UNITED STATES OF AMERICA** you find the *Brothers' War* and there are the pictures.

Think of what you want and look under the most important word. If you want a person, look under his name; if you want a country, look under its name. Everything is indexed under the word you are most likely to think of. For Poetry, see the Special Poetry Index.

**A B C**, how to learn the A B C, 245  
**A. D.**, what it means, 196  
**A. M.**, what it means, 1542  
**Aar**, river, in Switzerland, 2962  
**Aardvark**, life-story, 1002; picture, 1001  
**Abbas, Shah**, what he did for Persia, 3880  
**Abbe Constantin**, story of the book, 4761  
**Abbey Craig monument**, 748  
     picture, 5013  
**Abbey, Edwin A.**, art of, 4152  
**Abbott, Sir John**, as premier, 4106  
**Abbreviations**, the meaning of, 5645  
**Abd-el-Kader**, Arab chief, his life, 3167  
**Abdul Hamid II.**, sultan of Turkey, 3226  
**Abelard, Peter**, monk, his life, 3984  
**Aberdeen, Earl of**, governor-general, 4106  
**Abolitionists**, their aims, 2008  
**Abraham**, settled in Palestine, 3873  
     his visit to Egypt, 4788  
**Abuzzi, Duke of**, picture, 4725  
**Abu Bekr**, caliph, 3876  
**Abyssinia**, its people, 4260  
**Academy**, of Fine Arts, 4149  
     of Plato, 5510  
**Acadia**, English press claims against, 3621  
     Evangeline, story relating to the early days  
     in, with picture, 2461  
     granted to Sir W. Alexander, and called Nova  
     Scotia, 3621  
     inhabitants transported, 884  
     Nova Scotia so-called, 5601  
     settlement of, 879, 3619  
     taken by English, 881, 3622  
**Acetnango**, volcano, with picture, 4390  
**Acceleration**, what it is, 3432  
**Accidents**, what to do in case of accident, 5110  
**Achilles**, and Amazon queen, story, 962  
**Acid**, different degrees of power, 1801  
     formulas of acids, 1798  
     found in fruit, 4748  
     produced in the stomach, 2345  
     what is meant by an acid, 1797  
**Acid salts**, what they are, 1801  
**Aconcagua**, peak, 2502, 4497, 4569  
**Acontia**, lizard with no legs, 1219  
**Acorn**, planted by jays, 2209  
     will grow in water, 2584  
**Acre**, was captured, 1590  
**Acropolis**, hill at Athens, 3230  
     its buildings, 5128  
     picture, 5121

**Acting proverbs**, game, 5202  
**Actinolite**, in Canada, 5600  
**Active voice**, verb in, 3370  
**Adams, Abigail**, life of, 388  
     picture, 387  
**Adams, Herbert**, a sculptor, 4850  
**Adams, John**, administration, 3533  
     as president, 1394  
     as vice-president, 1390  
     heard "Hail Columbia," 2956  
     pictures, 1395, 3532  
**Adams, John**, discovered Neptune, 2429  
**Adams, John Quincy**, administration, 3534  
     as president, 1823  
     picture, 3532  
**Adams, Maude**, life and work, 3065  
**Adams, Samuel**, arrested by British, 982  
     opposed Constitution 1390  
**Adams, Sarah Flower**, wrote hymns, 1998  
**Adam's ale**, what it means, 5533  
**Adam's apple**, what it means, 5533  
**Addams, Jane**, life and work, 3064  
**Adder**, how its fangs are arranged, 160  
**Addison, Joseph**, life, with portrait, 4675  
     poems: see Poetry Index  
     with Steele, picture, 4677  
**Address book**, how to make, 2872  
**Adelaide**, capital of South Australia, 1362  
**Aden**, coaling station, 1876  
**Adjectival sentence**, what it is, 4299  
**Adjective**, what it is, 2649  
     why it is like an adverb, 3781  
**Adjective letter**, game, 5196  
**Adjutant**, bird, 1955; picture, 1963  
**Adrianople**, was taken by the Turks, 3154  
**Adriatic Sea**, where it is, 3149  
**Ad-Vance**, the, blockade-runner, 2019  
**Adverb**, what it is, 3707  
     why it is like an adjective, 3781  
**Adverbial sentence**, what it is, 4299  
**Aeetes**, king of Colchis, 186  
**Aegean Sea**, 3149, 5121  
**Aeneas**, a Trojan hero, 70, 5260  
**Aeneid**, the story of the Aeneid, 70  
**Aenopion**, a king of Chios, 3313  
**Aolian lyre**, a musical instrument, 1015  
**Aolians**, Hellenic tribe, 5124  
**Aolus**, the god of the wind, 1015  
**Aerated bread**, 1872  
**Aeroplane**, how high can a man fly, 5686  
     how it works, pictures, 163



# INDEX

**Myiornis**, bird, with picture, 1424, 1425  
**Esop**, made a slave, 2910  
 telling his fables, picture, 2908  
**Esop's fables**, angler and the little fish, 3853  
 ant and the grasshopper, 2141  
 ass in the lion's skin, 3853  
 beiling the cat, 463  
 boy who cried "wolf," 3310, 5238  
 boys and the frogs, 2303  
 cat and the mice, 4274  
 cat, the eagle, and the sow, 4806  
 crab and her mother, 3062  
 crow and the pitcher, 3508  
 dog and the ass, 2849  
 dog and the shadow, 560  
 dog and the wolf, 1979  
 dog in the manger, 189  
 donkey's wish, 2378  
 dove and the ant, 189  
 farmer and his sons, 2303  
 farmer and the stork, 2939, 4756  
 fir-tree and the bramble, 4274  
 fowl and the jewel, 560  
 fox and the bear, 3852  
 fox and the crow, 463  
 fox and the frog, 4008  
 fox and the goat, 3310, 5238  
 fox and the grapes, 560  
 fox and the lion, 3310, 5238  
 fox and the mask, 2303  
 fox and the wolf, 2378  
 fox in the well, 463  
 frogs and the bulls, 4804  
 frogs who wanted a king, 463  
 goat and the lion, 3508  
 goddess and the tree, 4804  
 goose with the golden eggs, 3853  
 hare and the tortoise, 462  
 hen and the fox, 4008  
 Hercules and the countryman, 5306  
 horse and groom, 1793  
 horse and the ass, 2849  
 jackdaw and the pigeons, 3852  
 Jupiter and the ass, 3310, 5238  
 lark and her young ones, 2378  
 lawyer and the pears, 2849  
 lion and the four bulls, 3508  
 lion in love, 4804  
 man and his negro servant, 4806  
 Mercury and the woodman, 2939  
 oak and the reed, 5205  
 old hound, 3124  
 old man and his sons, 3062  
 peacock and Juno, 4008  
 peacock and the crane, 5205  
 proud frog, 877, 4278  
 sick kite, 5205  
 snake and the file, 1793  
 stag in the ox-stall, 4805  
 stag looking into the water, 2939, 4756  
 thief and the dog, 3852  
 tortoise and the eagle, 3062  
 town mouse and the country mouse, 3124  
 travellers and the bear, 4274  
 two frogs, 3508  
 two loaded asses, 2141  
 vain jackdaw, 877, 4278  
 villager and the viper, 3310, 5238  
 wind and the sun, 3853  
 wolf and the crane, 560, 935, 4278  
 wolf and the kid, 2141, 2939, 4755  
 wolf and the lamb, 1793  
 wolf in sheep's clothing, 463, 2303  
 woman and the empty cask, 3853  
**Afforestation**, what it means, 3077  
**Afghan bands**, conjuring trick, 836  
**Afghanistan**, its history, 3938; map, 3933  
**Afgans**, are Mussulmans, 1550  
 besieged Ispahan, 3880  
 picture, 3939  
 ruled in Hindustan, 1700  
**Africa**, animals, 1766, 3076, 4251, 4260  
 Chinese in, 1768  
 climate and products, 1768, 3076  
 deserts and forests, 3071  
 explorers of, 279  
 extinct animals in, 5571  
 French power in, 2399  
 how the Germans colonised it, 2756  
 how the Romans won it, 416  
 maps, 281, 4253

**Africa**, outside the British Empire, 4261  
 people, 1766, 4251  
 physical features, 4253  
 pigmies in, 5569  
 railways, 4262  
 slavery in, 1769, 4252  
 the British Empire in Africa, 1765  
 White Man's (the) Grave, 5641  
 See also North Africa, South Africa,  
 and names of countries  
**Africander**, influenced by Moffat, 3483  
**After-images**, what they are, 3035  
**Agamemnon**, led the Greeks, 67  
 palace discovered, 5122  
**Agatha**, St., her martyrdom, 1013  
**Age**, why we grow old, 2875  
**Agessander**, partly made the Laocoon, 416  
**Agincourt**, battle of, 754, 2706  
 priest blessing the troops, picture, 753  
**Agnes**, Lady, of St. Dunstan's Tower, legend,  
 3312  
**Agnes of the Snow**, story, 3253  
**Agouti**, animal, 506, 671; picture, 667  
**Agra**, city in India, 1550  
**Agramonte**, Aristides, helped to conquer yellow  
 fever, 3200  
**Agricola**, built forts, 196  
 governed in Britain, 531  
**Agricultural ant**, grows crops, 2948  
**Agriculture**, improvement of plants, 2773  
 in arid regions, picture, 2419  
**Agriculture**, U. S. Department of, 1597  
**Agrimony**, pictures, 4967  
 what it is like, 4570  
**Agrippina**, picture, 530  
 poisoned her husband, 530  
**Agua**, Volcano de, in Guatemala, 4387  
**Aguineldo**, leader of the Filipino rebellion,  
 2184  
**Ahasuerus**, king of Persia, 5064  
**Ahas**, king of Judah, 4978  
**Ahmedabad**, Jain temple, picture, 2997  
**Ahriman**, a god of the Zoroastrians, 3000  
**Al**, a kind of sloth, 862  
**Aidan**, was a missionary, 430  
**Ainos**, settled in Japan, 364  
**Air**, air, fire, and water, 937  
 as a food, 2696  
 dissolves in water, 3762  
 fresh air and healthy lives, 1787  
 ground air, what it is, 912  
 has tides, 37  
 how it is kept round the earth, 5024  
 how it is renewed, 2077  
 how to feel the pressure of the, 5660  
 is always changing, 1128  
 is full of tiny creatures, 45  
 is made of gases, 1130, 1196  
 is necessary to sound, 3853, 4581  
 is part of the earth, 310, 838, 3691  
 its pressure, 1575, 3941  
 its specific gravity, 3816  
 its weight, 685, 1127, 1574  
 stops the light of the sun, 3691  
 the gases it contains, 285  
 where the bad air goes, 4550  
 why it is fresher after rain, 1859  
 why it seems hot before thunder, 1641  
**Aira Poros**, a waterfall, 1108  
**Air-brake**, invented, 2670  
**Air-breathing animal**, picture, 44  
**Air-cells**, the ending of the bronchi, 1636  
**Aird**, Sir John, contractor for the Assouan  
 dam, 5401  
**Air-passages**, in body, picture, 1635  
**Airships**, pictures, 161  
**Air-waves**, can be felt, 3756  
**Airy**, Sir G. B., made maps of the skies, 1662  
 opposed laying Atlantic cable, 2474  
 portrait, 1655  
**Aix-la-Chapelle**, peace of, 3622  
 town of Germany, 2752  
**Akbar**, pictures, 1698, 1699  
 ruled over India, 1700  
**Akkad**, name for Chaldaea, 4974  
**Akkadians**, people of Mesopotamia, 4974  
**Alabama**, admitted, 1824, 3534  
 secedes, 2010, 3536  
**Alabama**, the, privateer, 2015  
 purchased, 3736  
**Alabaster**, is a form of salt, 1800

# INDEX

- Aladdin**, and the wonderful lamp, story, with picture, 81
- Alario**, attacked Rome, 627, 5263
- Alarum clock**, 1536
- Alaska**, country, 1244  
history and description, with pictures, 2177, 4041
- Alban**, St., how he gave up his life, 482
- Albania**, conquered by the Turks, 122  
national costume, picture, 3225  
part of the Turkish dominions, 3224
- Albatross**, life-story, 1625; picture, 1627
- Albemarle, Duke of**, proprietor of Carolina, 523
- Albert**, prince-consort, 2540
- Albert, Jeanne d'**, queen of Navarre, 1654
- Albert Hall**, London, echoes in, 4583
- Albert Memorial**, 5004; picture, 5010
- Albert Nyanza, Lake**, 284, 4260
- Alberta**, added to Canada, 1248  
cattle ranges, picture, 4099  
description of, 5368  
minerals in, 5599  
organised, 4106  
province formed, 4106
- Alberta, the**, schooner, 3106
- Albertus Magnus**, portrait, 4625
- Ald**, its cathedral, 2398
- Albuera**, battle of, 4364
- Albumen**, what it is, 1574, 3242
- Alchemy**, the beginning of chemistry, 1940
- Alcohol**, death-rate caused by, 241  
how it absorbs water, 1172  
its effect on the body, 1386, 1443, 3318  
its effect on the brain, 4344  
its specific gravity, 3816  
the different alcohols, 1871  
the enemy of life, 241
- Alcott, L. M.**, her story, Little Women, 5143  
life and home, with pictures, 2045, 2046
- Alcuin**, monk, helped Charlemagne, 2064
- Aldelydes**, what they are, 1873
- Aldgate**, why it is so called, 198
- Aldrich, Thomas Bailey**: see Poetry Index
- Aldro**, paddle-boat, picture, 2471
- Alemanni**, settled in Switzerland, 2962
- Alert**, the, an exploring vessel, 4724  
and Essex, 1398
- Alexander**, names derived from, 4752
- Alexander the Great**, king of Macedon, his conquests, 1306, 1700, 4790, 5065, 5130  
stories concerning, 5308, 5312, 5313  
pictures, 1303, 5061
- Alexander VI.**, pope, beautified the Vatican, 4948  
invited Bramante to Rome, 4950
- Alexander I.**, of Russia, his reign, 3631
- Alexander II.**, of Russia, monument, 3222  
his reforms, 3632
- Alexander III.**, of Russia, 3598, 3632
- Alexander I.**, of Scotland, 3080
- Alexander II.**, of Scotland, 3082
- Alexander III.**, of Scotland, 3082
- Alexander, C. F.**, wrote hymns, 1998, 4853  
poems: see Poetry Index
- Alexander, John W.**, art of, 4152  
picture by, 4157
- Alexander, Sir William**, granted the whole of Acadia (Nova Scotia), 3621
- Alexandra, Queen**, her early home, 3598
- Alexandria**, Cleopatra's Needle set up, 5003  
its buildings, 4792  
its foundation, 4790  
its great library, 2802
- Alfred**, the, war-ship, 2898
- Alfred the Great**, founded London, 1158  
his life, 430  
how he fixed the time, 1535  
pictures, 433  
what kind of king he was, 2701
- Algeria**, Arab patriot of, story, 3167  
flag, picture in colour, face 1640  
how they telegraph there, 4313
- Algiers**, its climate, 2400  
picture, 4255  
taken by the French, 4261
- Alhambra Palace**, 3356; picture, 3362
- Ali**, was fourth caliph, 3876
- Ali Baba and the Forty Thieves**, story, with pictures, 182, 183
- Alice in Wonderland**, how the story was written, with picture, 1472, 1473
- Alice in Wonderland**, the story, with pictures, 2928, 3054, 3114
- Alien and Sedition Laws**, passed, 1394, 3533
- Alisan, Leon**: see Poetry Index
- Alkalies**, what they are, 1799
- All my eye and Betty Martin**, 5533
- All Red Route**, what it is, 1364
- Allah**, god of Mohammedans, 1585, 3002
- Allan, Sir William**, his picture of Scott, 2309
- Allan-a-dale**, his marriage, 2603
- Allegory**, what it is, 687
- Allen, Ethan**, takes Ticonderoga and Crown Point, 984, 1820
- Allerton, Ellen F.**: see Poetry Index
- Alliance**, the, war-ship, 2900
- Alligator**, its life-story, 1221; picture, 1229
- Allingham, William**: see Poetry Index
- Alliteration**, what it is, 469
- Alloys**, are mixed metals, 1870
- All's Well that Ends Well**, story of the play, 314
- Allston, Washington**, life and art, 4149
- Alma River**, passage of, 3632
- Alma-Tadema, Miss L.**: see Poetry Index
- Alma-Tadema, Sir L.**, his Joseph, 2911
- Almond**, how it grows, 1966; pictures, 1973
- Almond jumbles**, how to make, 3285
- Alphabet**, curious things about it, 3390  
how it was formed, 678  
how the word is made up, 4603  
how to learn the alphabet, 245  
the child's new animal alphabet, 246
- Alphonso XIII.**, king of Spain, 3360
- Alpines**, are mountain plants, 1828
- Alps**, the, 2959; among the snow-capped, 5669  
pictures, 409, 2876, 2958
- Alsace**, given up to Germany, 2277  
taken by France, 2528
- Altai Mountains**, in Siberia, 3746, 3932
- Aluminium**, in U. S., 2660  
its specific gravity, 3816
- Alum-shale**, where it is found, 4246
- Alva, Duke of**, persecuted the Protestants of Holland, 124, 3460, 5171
- Amalgams**, mixtures of mercury, 1869
- Amaryllis**, family of plants, 5272
- Amazon ant**, preys on other ants, 2948
- Amazon River**, picture, 4499; size, 4498
- Amazons**, queen's girdle fetched by Hercules, 5164  
warlike women, 962
- Ambato woman, grinding**, picture, 4575
- Amber**, attracts things, 1421, 2113  
the beginning of electricity, 5253
- Ambergris**, got from the sperm-whale, 1086
- Ambidextrous**, its meaning, 5020
- Ambrose, St.**, and Theodosius, picture, 3983  
his life, 3982  
wrote hymns, 1995
- Amenhotep III.**, king of Egypt, 4160
- Amenophis III.**, king of Egypt, 4976
- America**, animals unlike those of Europe, 13  
appearance of man in, 13  
colonisation in, 513  
disappearance of horse, 5570  
discovered by Columbus, 5506  
discovery celebrated, 3538  
earliest explorations in, 257  
early history, 9  
exploration of Arctic, 5212  
famous American writers, 1475  
how Columbus discovered it, with picture, 56, 57  
how it got its name, 58  
Indians of, 14  
its first people, 4384  
land claimed by the various nations, 268, 886  
map, 8  
naming of, 258  
prehistoric, 11  
trees of, with pictures, 5437, 5621
- See also Battles, Canada, Central, North, and South America, Colonies, Explorations, Mexico, United States, Wars, and names of separate states and countries**
- America**, history of the song, 2956
- American Temperance Society**, formed, 3534
- Amerinds**, proposed name for American Indians, 14
- Amherst, Sir Jeffrey**, in Canada, 884, 3622, 3897
- Amherst pheasant**, 1515; picture, 1516

# INDEX

- Amiens**, town of France, 2398  
**Ammonia**, what it is, 1196, 1289, 1790  
 why it cleans things, 2236  
**Ammon's temple at Karnak**, pictures, face 4786; in colour, 4791  
**Amoba**, life-story, 1004, 1101, 2456  
 pictures, 1005, 1103  
**Amphibia**, what they are, 661, 662, 2438  
**Amsterdam**, built on islands, 3456; picture, 3454  
 its trade, 204, 3462, 3464  
**Ama Daria River**, 3932  
**Amundsen**, explorer, picture, 4725  
**Amar River**, its length, 3752  
**Anaconda**, snake, 1374; picture, 1377  
**Anacreon in Heaven**, the tune of the Star Spangled Banner, 2956  
**Anagrams**, 5002, 5114  
**Anatolius, St.**, wrote hymns, 1995  
**Anchises**, father of Æneas, 5260  
**Anchor**, its parts, 4565; pictures, 4566  
**Anchovies**, sprats sold as, 205  
**Ancient lights**, its meaning, 2329  
**Andalusia**, province of Spain, 3353  
**Andersen, H. C.**, his dream of fairyland, picture, 1469  
 life, 1468; statue, 3598  
 tale of the signboards, with picture, 5342  
**Anderson, Alexander**: see Poetry Index  
**Andes Mountains**, their extent, 4381, 4497, 4574; picture, 2730  
**André, John**, life and death, with pictures, 3812  
 monument to, picture, 3810  
**Andrea Dona**, the, war-ship, 2898  
**Andrea, S. A.**, tried to reach the Pole, 4726  
**Andrew, St.**, cross of, 1029  
 flag of St. Andrew, 1029  
 patron saint of Scotland, 1213  
 said to have gone to Scythia, 2330  
**Andrew, St.**, of Crete, wrote a hymn, 1995  
**Androcles**, and the lion, story, with picture, 4704  
**Andromeda**, set free, with picture, 1049  
**Andros, Sir Edmund**, as governor, 525  
**Anemone**, different kinds, 5270  
 garden varieties, 5270  
 meaning of word, 5115  
 story about the anemone, 190  
**Aneroid barometer**, 3946; picture, 3941  
**Angelica**, description, 5038  
 picture, 5035  
**Angelico, Fra.** his life, 3987, 4948  
 pictures of him, 3985  
**Angle**, the different kinds, 446, 1923  
 size of, 2672  
**Angle of incidence**, what it is, 5177  
**Angler**, and fish, fable, with picture, 3853  
**Angler fish**, 210; picture, 208  
**Angles**, inhabitants of England, 427, 430  
**Anglesey**, derivation of name, 5387  
**Anglo-Saxon Chronicle**, 432, 594  
**Anglo-Saxon remains**, in British Museum, 428  
**Angola**, Portuguese West Africa, 4262  
**Angora goat**, 380  
**Anguish**, king of Ireland, 3211  
**Animals**, animal products of our country, 2657  
 association of ideas, 4940  
 colour, 1776  
 difference between animals and plants, 61, 168, 286  
 do not cry, 5383  
 dream, 4444  
 effect of high-pitched notes on, 4760  
 exhibits of stuffed, with pictures, 4901  
 extinct, in the earth's crust, 47, 169, 2887  
 food, 2456, 3214, 3236  
 fossil, picture, 18  
 found in America, unknown in Europe, 13  
 fur-bearing, 5152  
 fur-bearing, with pictures, 4817  
 how they talk to each other, with pictures 5323  
 length of life, 2327  
 life of young, with pictures, 5477  
 living in the sea, 1061  
 marsupials, 5479  
 most like men, 601  
 names, 51  
 parental instincts, 5134  
 power of thinking, 160, 1366, 4598  
 powers of speech, 1269, 1366  
 sculptured, with pictures, 4846, 4848  
**Animals**, sight, 153, 1867  
 size, 2886  
 strange dwelling-places, with pictures, 5411  
 that feed and clothe us, 375  
 that fly and burrow, 765  
 that live on ants, 1000  
 that serve man, 269  
 that work for Nature, 131  
 the different classes, 659  
 the story of the animals, 45, 49  
 their feelings, 4588  
 their instincts, 4549  
 their use, 51  
 their wonderful coats, 3407  
 unknown, with pictures, 5567  
 various, 5524  
 warm and cold blooded, 546  
 what animals are these? game, 2772, 2872  
 why can baby animals walk sooner than human babies? 5574  
 why they do not walk upright, 5836  
**Pictures of Animals**  
 how they came into the world, 49  
 prehistoric remains, 48  
 strange animals, in colour, face 48  
 that carry their babies in pockets, 863  
 that change their coats, 1777  
 that lived before man, 44, 48  
 that work for Nature, in colour, 137  
 the animal ladder of life, 660  
 the largest wild animals in Britain, 385  
 various animals and birds, 2327  
 See also under **Separate Names**  
**Ankle**, how it is formed, 2546  
**Annapolis**, renamed, 881  
**Annapolis Royal**, picture, 5602  
**Anne**, empress of Russia, her reign, 3630  
**Anne**, of Bohemia, 2852  
**Anne**, of Denmark, wife of James I., 3596  
**Anne**, of England, her reign, 1029, 2535  
**Anne of Gelestein**, story, 1494  
**Annie Laurie**, the story of the song, 3741  
**Annual meadow grass**, picture, 1341  
**Annals**, how to grow, 1350, 3398  
 live one season only, 233, 3734  
**Ant**, and the grasshopper, fable, with picture, 2141  
 dove and the ant, fable, 189  
 eggs of, really chrysalids, 5524  
 how ants are protected, 780  
 how to keep ants as pets, 3916  
 in hot countries, 1003  
 its sight, 4216, 5021, 5039  
 pictures, 2941, 2945, 2949  
 the life of the ant world, 2941  
**Antarctic exploration**: see Polar exploration  
**Ant-eater**, life-story, 1000; pictures, face 48 in colour, 1001  
**Antelope**, how it is hunted, 140  
 lives in Africa, 1766; picture, 381  
 the different kinds, 382  
**Anthracite coal**, where it is found, 4246  
**Antietam**: see Sharpsburg  
**Antigone**, sacrificed her life, 468  
**Antigonus**, received Macedonia, 5130  
**Antigua**, exports pine-apples, 1877  
**Antioch**, conquest by Barbarossa's army, 1590  
 siege of, 1588  
**Antiochus**, king of Syria, 117  
**Antiquary, The**, story of the novel, 1649  
**Antiseptic**, its meaning, 2100  
**Antivari**, port on the Adriatic, 3224  
**Ant-lion**, 3263; picture, 3259  
**Antonello**, of Messina, 1256  
**Antonine**, wall of, rampart, 533  
**Antoninus Pius**, emperor of Rome, his reign, with picture, 533  
**Antony, Mark**, his story, 421, 527  
**Antony and Cleopatra**, Shakespeare's play, 4792  
**Antrim**, rope bridge, picture, 31  
**Antwerp**, port, 3455; picture, 3454  
**Antwerp pigeon**, picture, 2213  
**Aorta**, artery of the body, 1583  
**Apatite**, in Canada, 5600  
**Ape**, and the wedge, 5421  
 care of young, 5480  
 different kinds, 601  
 does not cry, 5383  
 dwelling in trees, 5411  
 pictures, 603  
 story concerning, 5656

# INDEX

- Ape**, teeth of, 2098  
**Apelles**, painter, his birthplace, 4196  
**Apennines**, mountains in Italy, 3012  
**Aphis**, how the ant treats it, 3278  
 how the ichneumon fly treats it, 3258  
 how to treat it, 3278  
 pictures, 2945, 2949  
**Apollo**, wooed Marpessa, 1432  
**Apollo, Temple of**, Phigalæa frieze, picture, 4159  
**Apollodorus**, erected Trajan column, 5009  
**Apostles**, may have come to England, 2330  
**Appetite**, how it guides us, 3047, 3109  
**Apple**, cut inside without peeling, 6449  
 golden apples taken by Hercules, 5164  
 how its fruit is made up, 1127, 4110  
 how much water it contains, 1169  
 new varieties of, 2776  
 pictures, in colour, 649, 3735  
 the rosy apple, a story, 5345  
 when to gather apples, 4354  
 where our apples come from, 641  
 why does an apple turn brown if we bite it  
 and put it aside, 5641  
 why it falls to the ground, 303  
**Applique work**, and pictures, 4996  
**Appomattox**, scene of Gen'l Lee's surrender,  
 with picture, 2022  
 surrender at, 3536  
**Apprentice boy and his master's children**,  
 story, 3010  
 the brave apprentice, story, with picture, 4333  
**April**, how it got its name, with picture, 4517  
 what the name means, 4532  
**Apteryx**, pictures, face 48, in colour, 1431  
 what kind of bird it is, 1428  
**Aqua regia**, can melt gold, 1293  
**Aquarium**, fresh-water, with picture, 4145  
 salt-water, how to make, 4454  
**Aquinas, Thomas**, what he taught, 4618, por-  
 trait, 4625  
**Aquitaine, Eleanor, Duchess of**, 2702  
**Arabia**, its history and geography, 3875  
 pictures, 3873, 3879  
**Arabian camel**, 276; picture, 273  
**Arabis**, plant, 5270  
**Arabs**, conquered Palestine, 1585  
 fought for their religion, 3152  
 invaded India, 1700  
 invaded Italy, 3014  
 settled in Africa, 280, 4251  
 studied astronomy, 1656  
 their great learning, 3878  
**Aragon**, province of Spain, 3353  
**Aral, Sea of**, 3072, 3753  
**Aramaic**, language spoken by Jesus, 1270  
**Araba**, battle of, 1306, 5065; picture, 5061  
**Arbitration**, a method of settling differences,  
 3241  
 of Venezuela Boundary dispute, 3538  
**Arbutnot, John**, sketch, 2331  
**Arc, Joan of**: see Joan of Arc  
**Arc de Triomphe**, 5005; picture, 5012  
**Arcachon**, oyster fishery, picture, 3773  
**Arcadia**, kingdom of Arcas, 3314  
**Arcas**, son of Jupiter, his life, 3314  
**Arcb**, stronger when narrow, 4600  
 two kinds, and picture, 620  
**Archæosaurus**, animal, picture, 44  
**Archæopteryx**, first known bird, 47, 765  
**Archangel**, port on White Sea, 3753  
**Archangel**, the dead-nettle, 4290  
**Archer**, constellation, picture, 2613  
**Archer, J. W.**, artist, 5620  
**Archimedes**, discovered law of floating things,  
 3096  
 experimented with metals, 1658  
 portrait, 4625  
**Archipelago**, sea with many islands, 3149  
**Archifecture**, a draftsman of English, 5619  
**Arc-lamps**, their light, 658  
**Aroola**, battle, won by Napoleon, 4361  
**Aroot**, captured by the British, 1094, 1704  
**Arctic exploration**: see Polar exploration  
**Arctic fox**, 3410; picture, 3407  
**Arcturus**, star, 2612; pictures, 2611, 2613  
**Ardenne**, hills in Belgium, 3455  
**Area**, how to measure, 5248  
**Argali**, mountain sheep, 378  
**Argall, Samuel**, expedition to Acadia, 3621  
**Argentine**, flag, picture in colour, 1640  
**Argentine**, its soil, 3341  
 state of South America, 4569  
**Argentine fox**, 670  
**Argo**, the, ship which carried Jason, 186  
**Argolis**, its ancient name, 5004  
**Argon**, contains other elements, 1296  
 is made from radium, 1419  
 why so called, 939  
**Argus**, built a galley for Jason, 185  
**Argus**, the dog of Odysseus, 4221  
**Aristæus**, wrote on conics, 4618  
**Aristides the Just**, picture, 5127  
**Aristotelians**, philosophers, 1308  
**Aristotle**, great philosopher, 1308  
 his mistake about falling weights, 304, 1659,  
 3551  
 pictures, 1307, 4625  
**Arithmetic**, adding and subtracting fractions,  
 5383  
 adding numbers together, 1690, 1931  
 adding sums of money together, 4300  
 division by three figures, 3784  
 factors and prime numbers, 5053  
 fractions, or parts of numbers, 5235  
 highest factor and lowest multiple, 5117  
 how Fred and Charlie counted, 248, 489  
 how numbers are divided, 3372, 3425  
 how to divide money, 4752, 4908  
 how to do long division, 3493, 3710  
 how to learn the figures, 730  
 how to multiply by ninety-nine, 579  
 how to multiply figures, 2411, 2651, 2891, 3131  
 how to subtract, 2172, 3290  
 how we count from ten to ninety-nine, 970  
 in rhyme, puzzles, 4351, 4458  
 its relation to music, 4861  
 money tables and reduction, 4092  
 multiplication and division of fractions, 5535  
 multiplying sums of money, 4533, 4605  
 new way to divide numbers, 4036  
 numbers from ten to nineteen, 1210, 1449  
 the subtraction of money, 4465  
**Arizona**, description of, 3590  
 Indians of, 3683  
 its deserts and forests, 3072  
**Ark, Noah's**, said to have rested on Mount  
 Ararat, 3873  
**Arkansas**, admitted, 1828, 3535  
 as slave-state, 2010  
 secedes, 2012, 3536  
**Arles**, where a council was held, 2330  
**Arm**, bones, picture, 2543  
 how it is formed, 2545  
 how the arms give man power, 3566  
 how the muscles work, 2627  
 why we swing our arms, 2455  
**Armada**, story of, 848; pictures, 849, 1941  
**Armadillo**, life of, 1002; pictures, 44, 1000  
**Armenia**, conquered by the Seljouks, 3878  
 taken by Russia, 3880  
**Arminius**: see Hermann  
**Armour**, why it is not used now, 157  
**Arno**, river of Italy, 3012  
**Arnold, Benedict**, at Quebec, 984, 3398  
 at Saratoga, 988  
 drives back Canadian army, 986  
 treason of, 992, 3812  
**Arnold, Matthew**: see Poetry Index  
**Arnold, Samuel J.**, wrote The Death of Nel-  
 son, 3740  
**Arnold, Sir Edwin**: see Poetry Index  
**Arnolfo di Cambio**, his life, 2780  
**Arras Cathedral**, its tapestries, 4954  
**Arrian**, wrote what Epictetus taught, 2911  
**Arrow**, what makes it fly, 4545  
**Arrowhead**, plant, 4963; pictures, 4960, 4961  
**Arrowroot**, is mostly starch, 2926  
**Arsenic**, in Canada, 5600  
 in wall paper, 5575  
 non-metallic element, 1294  
**Art, Archer, J. W.**, 5620  
 famous makers of Rome, 4945  
 how an artist thinks, 4943  
 Irish, 5461  
 new birth of art: see Renaissance  
 painters of the United States, with pictures  
 4147  
 Presstel, John, 5694  
 twelve great painters, 757  
 Twopeny, William, with pictures, 5619  
 what it includes, 4159

- Artabanus**, Parthian king, 5066  
**Artaxerxes I.**, king of Persia, 5064  
**Artaxerxes II.**, king of Persia, 5076  
**Artaxerxes III.**, king of Persia, 5065  
**Artaxerxes (Ardashir)**, king of Persia, 5066  
**Artemis**, Greek goddess of purity, 190  
**Artemisia**, Queen, builds the Mausoleum, 5566  
**Arterice**, 1579: picture, 1636  
**Artesian well**, what it is like, 2366  
**Arthur**, eldest son of Henry VII., 842, 2708  
**Arthur**, king of England, and Richmond Hill, 1983  
 Geraint and Enid, 1976  
 his fight with Sir Pellimore, 870  
 pictures, face 867, 872, 1680  
 rescues Amoret, 692  
 Sir Tristram, 3211  
 the coming of King Arthur, 867, 1680  
 the founding of his kingdom, 869  
 the passing of King Arthur, 3311  
**Arthur, Chester A.**, administration, 3537  
 becomes president, 2417  
 picture, 3532  
**Arthur's Chariot**, the Great Bear, 3314  
**Articles of Confederation**, convention for changing, 1389  
 of the United States, 1388  
**Artificial fertiliser industry**, 854  
**Arum**, plant, how to treat it, 2564  
**Aryans**, conquered part of India, 1699  
**As You Like It**, story of, with picture, 629  
**Asama-yama**, volcano of Japan, 370  
**Asbestos**, in Canada, 5600  
 why it does not burn, 916  
**Ascension**, British Island, 1876  
**Asgard**, the home of gods, 3581  
**Ash**, American, 5624  
 pictures, 3186, 5623  
 what kind of tree it is, 3188  
**Ashantees**, warlike people in Africa, 1766  
**Ashes**, what they are made of, 2506  
**Ashley, Lord**, a proprietor of Carolina, 523  
**Ashur**, god of Assyria, 4980  
**Ashur-bani-pal**, called himself king of Assyria, 5067  
 his power, 4980  
 killed his brother, 4982  
 pictures, 4971, 4981  
**Ashur-nasir-pal**, king of Assyria, portrait in stone, picture, 4981  
 remains of palace discovered, 4977  
**Asia**, history of south-western Asia, 3873  
 its sandy deserts, 4123  
 See also under Central Asia and Names of Countries  
**Asia Minor**, conquered by the Arabs, 3876  
 gained by Seljouk Turks, 3154  
 invaded by the Seljouks, 3878  
 part of Asiatic Turkey, 3873  
 physical features and historical interest, 3874  
**Asiatic Turkey**: see Turkey in Asia  
**Askew, Anne**, put to death, 5068  
**Asoka**, great ruler in Hindustan, 1700  
**Aspen**, tree, 4600  
**Ass**, the ass in the lion's skin, fable, with picture, 3853  
 the word in different languages, 5233  
 two loaded asses, fable, with picture, 2141  
**Assaye**, battle of, 4362  
**Assiniboia**, organised, 4105  
**Association of Ideas**, how it works, 4939  
 how to think, 5025  
 in memory, 5029  
 what it means, 4598  
**Assuan**, dam across the Nile, 4260  
**Assyria**, conquest by Babylonians, 5067  
 pictures, 3097, 3399, 4971, 4973  
 sculpture in, 4160  
 story of its past, 4971  
 war with Egypt, 4788, 4980  
 writing on clay, 3863  
**Asbury, John**, potter, his life, 4478  
**Aster**, picture, 5184  
 seaside, 5190  
 what the word means, 5116  
**Astolat**, Lily Maid of Astolat, story, 1185  
**Astrakhan**, port of Russia, 3626, 3750  
**Astronomy**, study of the stars, 1940  
**Astronomers**, story of, 1655  
**Astronomy**, comets, meteors, and sky dust, 2495  
**Astronomy**, the colour of the stars, 2715  
 the making of other worlds, 2861  
 the moon, the lamp of night, 2219  
 the stars as we see them, 2609  
 the sun's family of worlds, 2423  
 the wonder of the sun, 2081  
 the wonder of time and tide, 2279  
 what it tells us, 1655  
 worlds in the skies, 1939  
 See also Earth, Child's Story of the  
**Atsyages**, king of Media, 5057  
**Atbara**, river in Egypt, 4260  
**Athabasca**, organised, 4105  
**Athanasius, St.**, his life, with portrait, 3981  
**Athene**, goddess, aided Perseus, 1049  
 her temple, 5128  
 picture, 4617  
 statue in the Parthenon, 5125  
 statues on the Acropolis, 5128  
 worshipped at the Parthenon, 3220  
**Athenodorus**, made the Laocoon, 4166  
**Athens**, chief Ionian state, 5124  
 city of Greece, her power, 1302  
 influence on the world, 5128  
 its history, 5128  
 its temples and sculptures, 5128  
 Lysicrates temple, 5004  
 pictures, 3218, 5008  
 sacked by the Persians, 5064  
 the capital of Greece, 3150, 3220  
**Atlantic cable**, how it was laid, 2476  
 how men tell where it is broken, 4550  
**Atlantic Ocean**, bottom of, picture, 4556  
**Atlas**, picture, 4437  
 supposed to hold up the world, 4518  
**Atlas Mountains**, in north of Africa, 4253  
**Atmospheric pressure**, what it is, 3941  
**Atoms**, are like living creatures, 4601  
 discovered by John Dalton, 1372, 1666  
 how atoms mix, picture, 1041  
 how they affect elements, 1193  
 made up of electrons, 1004, 5254  
 the world inside an atom, 1653  
 what they are, 1041, 1419  
**Attar of roses**, made in Bulgaria, 3222  
**Attica**, division of Greece, 3150, 5124  
**Attila**, defeated in Germany, 2522, 3933  
 leader of Huns, driven out of Gaul, 2317  
**Attraction**, the power by which the earth holds us to itself, 1062  
**Auber, Harriet**, wrote a hymn, 1998  
**Aubrietia**, how to treat the seeds, 1074  
**Auckland**, province of New Zealand, 1462  
**Auditives**, people who think by sound, 4944  
**Augean stables**, cleansed by Hercules, 5163  
**Augsburg**, city of Germany, 2754  
**August**, how it got its name, 4519, 4533  
**Augustan Age**, name given to Anne's reign, 2540  
 what it means, 528, 5266  
**Augustine, St.**, came to England, 428, 4708, 3329  
 pictures, 429, 4710  
**Augustus, Octavian Cæsar**, defeated Cleopatra, 5003  
 first Roman emperor, 421  
 gave name to month August, 4519, 4533  
 his great power, 5266  
 his rule, 527  
 mourned over the Roman army, 2522  
 pictures, 528, 4519, 5259  
**Auk**, different kinds, 1630  
**Auld Robin Gray**, song, with picture, 3739  
**Aunt Sally**, garden game, 1072  
**Auricle**, chamber of the heart, 1582  
**Auricula**, in the garden, 5271  
 kind of primrose, 2042, 5271  
**Aurora**, goddess, Reni's picture, 4589  
**Aurora borealis**, its electrons, 5252; picture, 3856  
 what it is, 5251  
 why it appears in the north, 5252  
**Aurungzebe**, king of India, 1702; portrait, 1699  
**Austen, Jane**, at her desk, picture, 2591  
 her life, with portrait, 2593  
**Austerlitz**, battle of, 2276, 2530, 3631  
 town in Bohemia, 2576  
**Austin, Alfred**: see Poetry Index  
**Australasia**, what it consists of, 1466  
**Australia**, animals, 378, 384, 1356, 1364  
 flag of, picture in colour, 1640  
 its products 353, 1358, 1364



# INDEX

- Australia**, map of, 1385  
part of a continent, 3004  
pictures, 352, 355, 1357, 1359  
population, 1364  
railways, 1360  
the great south land, 1355  
the men who found Australia, 353  
**See also Southern and Western Australia**  
**and Names of Countries**
- Australian Alps**, 1358  
**Australian bear**, 862  
**Austria**, flag, 1640; picture in colour, 1640  
house of Hapsburg founded, 2527  
invaded by Napoleon, 2274, 2530  
its climate, 2858  
its different parts, 2576  
joined Prussia against Denmark, 2578  
lost Silesia, 2530  
relations with Bosnia, 3224  
the empire of many races, 2851  
trade with Servia, 3222  
Turks driven out, 3158  
union with Hungary, 2856  
union with the Tyrol, 2855  
**Austria-Hungary**: see **Austria & Hungary**  
**Austrian Tyrol**: see **Tyrol**  
**Austrians**, at war with the Swiss, 2964  
driven out of Italy, 3021  
made slaves, 2528
- Autoclaves**, vessels used to hold oils, 2362  
**Auvergne Mountains**, once volcanic, 2392  
**Avalanche**, how it crashes down, picture, 2514  
how it is formed, 3228
- Avebury, Lord**, experimented with ants, 2493, 2947  
experimented with hearing of insects, 5021  
studied bees, 780, 4216  
what he said of ants, 4216
- Avens**, seed, picture, 3833
- Avignon**, its palace of the popes, 2398
- Avocet**, bird, 1958; picture, 1959
- Avon**, Bristol, its suspension bridge, 20
- Axe**, its use, with picture, 337
- Aybeck**, a Mameluke captain, 2912
- Aye-aye**, kind of lemur, with picture, 607
- Aylesbury duck**, 1520
- Azaleas**, American, 4487  
how to treat, 579, 2254  
pictures, 4493
- Azote**, old name for nitrogen, 3342
- Azotobacter**, microbe in the soil, 3342
- Azov**, town, 3158, 3631
- Azov, Sea of**, in Russia, 3623
- Atsacs**, American tribe, 4382, 4384  
conquered by Cortez, 280, 5089
- B**
- B. C.**, what it means, 194
- Babar**, founder of Mogul Empire, 1702  
portrait, 3931
- Babel, Tower of**, its destruction, 4983; picture, 3037  
where it was, 3875
- Babes in the Wood**, story, with picture, 1523, 5056
- Babington, Anthony**, his plot, 3083
- Baboon**, 607; care of young, 5480  
intelligence and communication, 5323  
picture, 603
- Baby**, why it cannot stand upright, 3836  
why it cannot talk when born, 2873  
why it requires so much sleep, 3379
- Babylon**, buried city, 5098, 5100  
capital of Babylonian, 4974  
city, picture, 4975  
entry of Alexander the Great, picture, 1303  
hanging gardens, picture, 4983  
its buildings, 4983  
taken by Alexander the Great, 5065  
taken by the Persians, 4984, 5058
- Babylonia**, brickmaking and agriculture, 4976  
building of cities, 4976  
conquest by Assyria, 4977  
links between old and new empires, 4984  
name adopted, 4974  
new empire founded, 4983, 5057  
return of the Jews, 5058  
story of its past, 4971  
under the Medes, 4983  
writing of the Babylonians, 3399, 3863
- Babyroussa**, picture, 383; wild pig, 384
- Baccharis**, his discovery in electricity, 2118
- Bacchus**, spirit of the vine, 556
- Bach, Johann Sebastian**, musician, his life, 3244; pictures, 3243, 3247  
story of him as a child, 3786
- Bachelor's button**: see **Cornflower**
- Bachelor's buttons**, origin of name, 5115
- Backbone**, animals with a, 661  
animals without a backbone, 669  
how it is made, 664, 2440, 2455  
pictures, 664, 2441
- Bacon, Francis**, believed in astrology, 1940  
portrait, 4625  
what he taught, 4618
- Bacon, Lord**, title did not exist, 5524
- Bacon, Mrs. J. D. D.**, sketch of work, 2050
- Bacon, Roger**, his life, 3986; portrait, 4625  
wrote an encyclopædia, 600
- Bacon's Rebellion**, in Virginia, 525
- Bactrian camel**, 276; picture, 273
- Baden**, grand-duchy of Germany, 2754
- Baden-Powell, General**, and Boy-Scouts, 3584
- Badger**, dwelling, 5414  
picture, 137  
what kind of animal it is, 142
- Baeda**: see **Bede**, the Venerable
- Baffin, William**, was an explorer, 4722
- Bag**, brush-and-comb bag, with picture, 232  
how to make, with pictures, 2569  
needlework, 5665  
why a bursting bag makes a noise, 3095
- Baghdad**, caliphs, 3878  
destroyed by the Mongols, 3878  
pictures, 811, 3877
- Eagles**, party in Norway, 3594
- Bagot, Sir Charles**, governor of Canada, 4098
- Bagpipes**, why they make music, 3096
- Bahama Islands**, 1876
- Baikal Lake**, in Siberia, 3752
- Bailey, E. H.**, made Nelson statue, 1166, 5004
- Bailey, Philip James**: see **Poetry Index**
- Baillie, George**, married Grisel Hume, 5618
- Baillie, Johanna**: see **Poetry Index**
- Baillie, Robert**, a covenant, 5616
- Bainbridge, William**, commander of the Constitution, 2902  
commander of the Philadelphia, 2900  
picture, 2899
- Baker, Lady**, worked with her husband, 4445  
portrait, 4445
- Baker, Sir B.**, designed Forth Bridge, 20
- Baker, Sir Samuel**, discovered Lake Albert Nyanza, 284  
his work for slaves, with picture, 4445
- Baker, W. E.**, an inventor, 1624
- Baker's dozen**, what it means, 5533
- Baku**, port of Russia, 3630, 3752
- Bala**, town in Wales, 2549
- Bala Lake**, picture, 2549
- Balaclava**, battle of, 1098, 3632
- Balance**, feats of, 5659  
its control, 1868, 2232, 3964  
nerves of sense of balance, picture, 3953  
**See also Equilibrium**
- Balboa, Vasco Nuñez de**, explorer, 4502  
on Isthmus of Panama, 258  
portrait, 261
- Balder, King**, his burial, 3417
- Bald-headed eagle**, 1843
- Baldness**, its cause, 2074
- Baldwin I.**, emperor of Constantinople, 3154
- Baldwin I.**, king of Jerusalem, 1587, 1588
- Baldwin II.**, king of Jerusalem, 1589
- Baldwin III.**, king of Jerusalem, 1589
- Baleares Islands**, east of Spain, 3354
- Baleen whale**, life-story, with picture, 1082
- Balfe, Michael**, composer, 3252, 3743
- Balkan Mountains**, 3149
- Balkan Peninsula**, its countries, 3219  
its history, 3150  
natives, pictures, 3225  
the rise and decline of Turkey, 3149  
why its states never united, 3149
- Ball**, games for the garden, 1614  
how to make a ball of many colours, with pictures, 1197  
in the hollow post, 5344  
its bounce, 1133; with picture, 5015  
the ball that answers questions, trick, with picture, 581

# INDEX

- Ball**, why it falls when thrown, 3470  
 why it moves forward when thrown, 1988  
 why playing it is good for children, 4511  
**Ball, Dr.**, and the baboon, 607  
**Ball, Sir Robert**, earth's distance from the sun, 2083  
 what he said about the moon, 2220, 2224  
 what he said of stars, 1948  
 what he said of the Orion nebula, 2866  
**Ball, Thomas**, sculpture of, 4844  
**Ball bearings**, what they are, 684, 4001  
**Ballad**, story in verse, 97, 825  
**Balliol, John**, king of Scotland, 118  
**Balloon**, cannot go above the air, 1577, 3963  
 how heat makes it expand, pictures, 4369  
 how it keeps up, 912  
 how it sails in the sky, pictures, 396  
 how to make a hot-air balloon, with pictures, 3517  
 what we should see from a balloon still in the sky, 3234  
 why a balloon sails, 161  
 why it rises, 3816  
**Balloon breaking**, game, with picture, 4242  
**Ballyunion**, single-rail railway, 91  
**Balsam**, picture, 4838  
**Baltic**, battle: see Copenhagen, battle of  
**Baltic**, steamer, saved the Republic, 3524  
**Baltic Sea**, is becoming less salt, 204  
 joined to the North Sea, 2750  
 the Mediterranean of the north, 3591  
 why it freezes, 3600  
**Baltimore, Lord**, founder of Maryland, 520  
 portrait, 519  
**Baluchistan**, state, 3873  
**Bamboo**, a grass, 1332  
**Ban**, king of Gaul, helped King Arthur, 869  
**Banana**, where it grows, with pictures in colour, 641  
 picture, 2183  
**Banded adder**, called the king snake, 1378  
**Banded paracirrhites**, picture in colour, face 200  
**Banded sea-snake**, picture, 1379  
**Bandicoot**, its life-story, with picture, 864  
**Bank**, picture, 4107  
**Bank of England** crossing-sweeper, story, 1796  
**Banks, Gen'l**, driven across Potomac, 2016  
**Banks, George L.**: see Poetry Index  
**Banks, Sir Joseph**, on the steamboat, 2470  
**Banks**, at Chicago, picture, 5517  
 United States Bank, 1828  
**Bank-vole**, destructive animal, 772  
**Bannockburn**, battle of, 750, 3084  
**Barbados** earth, what it is, 2340  
**Barbados**, island of West Indies, 1878  
**Barbarossa**: see Frederic Barbarossa  
**Barbary ape**, 608; picture, 605  
**Barbary falcon**, 1846  
**Barbary States**, states of Africa, 4260  
**Barbault, Anna**: see Poetry Index  
**Barbel**, fish, 2681; picture, 2679  
**Barberry**, description, 4492  
 fruits, picture, 4489  
 holly-leaved; see Holly-leaved barberry  
**Barcelona**, port of Spain, 3353, 3361  
 scene in a street, picture, 3351  
**Barclay, Capt.**, commander English fleet, 3901, 4279  
**Bard**, poet of long ago, 469  
**Barents, William**, his explorations, 4722  
**Barents Land**, named after discoverer, 4722  
**Barham, Richard**: see Poetry Index  
**Barling-Gould, Sabine**, poems: see Poetry Index  
 wrote hymns, 2000  
**Bark**, uses of, 5628  
 what it does for the tree, 917  
**Barley**, its value as food, 2926; picture, 2923  
 used in alcohol, 1872  
**Barley grasses**, pictures, 1337, 1339  
**Barley sugar**, how to make it, 3512  
**Barmen**, mono-rail, picture, 91  
**Barnaby Rudge**, story of the novel, with pictures, 2761  
**Barnacle goose**, 1522; picture, 1519  
**Barnard, George Gray**, sculpture of, with pictures, 4848, 4849  
**Barn-door cock**, how to make, with pictures, 333  
**Barometer**, how it measures mountains, with pictures, 3945, 3946  
 how to make chemical weather-glass, 4354  
**Barometer**, how to make a floral, 3928  
 how to make, with pictures, 2969  
 made at home, with picture, 5447  
 one a boy can make, with pictures, 2129  
 what it does, 3944  
 what it is, 776  
**Barque**, what it is like, 3915; picture, 3914  
**Barquentine**, 3915; picture, 3914  
**Barr, Amelia**, picture, 2043  
**Barr, Matthias**: see Poetry Index  
**Barra, Joseph**, who died for the Republic, 5512  
**Barras, Comte de**, member of French Directory, 4356  
**Barren brome**, picture, 1337  
**Barrie, J. M.**, his story, Peter Pan, with pictures, 2843  
 his writings, 1474  
 portrait, 2843  
**Barrows**, old grave-mounds, 194  
**Barry, Sir Charles**, architect, his life, 1164  
**Barry Cornwall**: see Cornwall, Barry  
**Bartholomew**, names derived from, 4753  
**Bartholomew, St.**, visited Asia, 2330  
**Bartlett, Paul Wayland**, sculpture of, with picture, 4843, 4848  
**Bartlett, Robert A.**, commander of the Roosevelt, 5212  
**Bartolommeo, Fra**, Florentine artist, 2790  
 painted a portrait of Savonarola, 3990  
**Bartsia**, red, picture, 5188  
**Bartoluccio**, Ghiberti's stepfather, 2782  
**Basalt**, what it is like, 5198  
**Basel**, makes silk goods, 2968  
**Baseball bat**, how to mend, 4249  
**Bases**: see Alkalies  
**Basil II.**, Byzantine emperor, 3154  
**Basilica, The**, at Treves, 2754  
**Basilik**, crested lizard, 1219  
**Basket**, fern-basket for a nickel, 5665  
 from willows, with pictures, 393  
 making hamper, with pictures, 2131  
 of raffia, 5456  
**Basking shark**, 2443; picture, 2445  
**Bass**, will live in an aquarium, 4455  
**Bass, George**, explored Australia, 353  
**Bass Rock**, Firth of Forth, gannets, 1632  
 foghorn, picture, 4423  
**Bass Straits**, Tasmania, 1356  
**Baste the bear**, garden game, 1072  
**Bastille**, prison in Paris, 2072, 2270  
**Basutos**, tribe, 1766; picture, 1764  
**Bat**, 158, 765, 3540; pictures, 51, 767  
**Bat**, mysterious Chinese cricket-bat, trick, with picture, 1618  
**Batavia**, city of Java, 3462  
**Batavian Republic**, formed, 3463  
**Batavians**, tribe of the Netherlands, 3457  
**Bates, David**: see Poetry Index  
**Bath**, buried city found, 5100  
 the baths of Bath, tale, 1108  
 was a Roman city, 198  
**Bathing**, rules about bathing, 3820  
**Bathing-gown**, how to make, with picture, 3921  
**Bathurst, Benjamin**, story of his disappearance, and picture, 1112  
**Bathurst burr**, and seed, pictures, 3833  
**Batoum**, port on Black Sea, 3752  
**Battery**, the, history of, with pictures, 4305  
**Battle Hymn of the Republic**, history of the song, 2956  
**Battle of the Nations**, 2576, 4364  
**Battle of the Standard**, 594, 3080  
**Battles**, Bennington, 988  
 Brandywine, 988  
 Buena Vista, 1832  
 Bull Run, 2013, 2016  
 Bunker Hill, 984  
 Cerro Gordo, 1832  
 Chancellorsville, 2016  
 Chapultepec, 1832  
 Chickamauga, 2018  
 Chippewa, 1399, 3901  
 Churubusco, 1832  
 Cold Harbour, 2019  
 Concord, 983  
 Contreras, 1832  
 Corinth, 2016  
 Cowpens, 992  
 Fair Oaks, 2016  
 Five Forks, 2022  
 Fort Donelson, 2013

# INDEX

- Battles**, Fort Duquesne, 884, 885  
 Fort Fisher, 2019  
 Fort Frontenac, 885  
 Fort Henry, 2013  
 Fort Niagara, 885  
 Fort Sumter, 2012  
 Fort Ticonderoga, 984, 1820  
 Fredericksburg, 2016  
 Germantown, 988  
 Gettysburg, 2016  
 Great Meadows, 882  
 Harlem Heights, 986  
 Hatteras Inlet, 2014  
 Island No. 10, 2013  
 King's Mountain, 980, 1822  
 Lake Champlain, 3620  
 Lexington, 983  
 Long Island, 988  
 Lookout Mountain, 2018  
 Louisburg, 881, 884  
 Lundy's Lane, 1399, 3901  
 Missionary Ridge, 2018  
 Mobile, 2019  
 Monterey, 1832  
 Moore's Creek, 986  
 Moraviantown, 3901  
 New Orleans, 1400, 2014  
 Palo Alto, 1832  
 Perryville, 2016  
 Petersburg, 2020, 2022  
 Pittsburg Landing, 2013  
 Plattsburg, 3901  
 Port Royal, S. C., 2014  
 Quebec, 880, 885, 984, 3622  
 Resaca de la Palma, 1832  
 Saratoga, 988  
 Seven Days, 2016  
 Seven Pines, 2016  
 Sharpsburg (Antietam), 2016  
 Shiloh, 2013  
 Ticonderoga, 262, 885  
 Trenton, 986  
 Vera Cruz, 1832  
 Vicksburg, 2016  
 Waterloo, 5362  
 White Plains, 986  
 Wilderness, 2019
- Battles (naval)**, Bon Homme Richard and  
 Serapis, 2898  
 Bon Homme Richard and the Countess of  
 Scarborough, 2898  
 Chesapeake and Shannon, 1399, 2902  
 Constellation and La Vengeance, 2900  
 Constellation and L'Insurgent, 2900  
 Constitution and Java, 1398, 2902  
 Constitution and La Guerrière, 1398, 2901  
 Enterprise and Boxer, 2902  
 Essex and Alert, 1398  
 French and English in Gulf of St. Lawrence,  
 3620  
 Hornet and Peacock, 1398, 2902  
 Lake Champlain, battle of, 2902  
 Lake Erie, battle of, 1399, 3901, 4279  
 Manila Bay, battle of, 2184  
 Merrimac and Monitor, with picture, 2014  
 Ranger and the Drake, 2898  
 Revenge and Spanish fleet, 5395  
 Santiago, Cuba, 2188  
 United States and Macedonian, 1398  
 Vasp and Frolic, 1398, 2902
- Battledore**, how to mend, 4249  
**Battle-dore and shuttlecock**, game, 3516  
**Bavaria**, state of Germany, 2576  
**Baxter, Richard**: see Poetry Index  
**Bayard, Chevalier de**, death, picture, 129  
 his life, 128  
**Bayberry**, picture, 5189  
**Bayeux**, its famous tapestry, 592, 2498  
**Bayly, Thomas Ha-nes**, song-writer, his life,  
 3740; portrait, 3737  
**Bayonet**, how the word was made, 4532  
**Bayne, Marshal**, picture, 4385  
**Beach**, games to play on, with pictures, 5528  
 sand builders, pictures, 1415  
**Beachy Head lighthouse**, how it was built,  
 with pictures, 738  
**Beaconsfield, Earl of**, as prime minister, 2388;  
 pictures, 2379, 2383  
**Bead**, what to do with beads, with picture,  
 2033  
**Bead belt**, how to make, with picture, 2868  
**Bead loom**, how to make, with picture, 2868  
**Beadlet**, see anemone, 4454  
 picture in colour, face 2335  
**Beagle**, ship, Darwin's voyage, 856  
**Beaked Chesodon**, picture in colour, face 200  
**Beam**, of a ship, 4566  
**Bean Betting**, dance, with pictures, 2765  
**Bear**, brown, 138  
 clawed the chipmunk, 1068  
 how the bear lost his tail, 1063  
 how the word is derived, 5233  
 in the well, story, in colour, 4934  
 pictures, 51, 138, 4729, 5189  
 polar bear not white, 5524  
 the three bears, story, with pictures, 1187  
 various kinds, 141  
**Bear Tamer**, the, picture of, 4843  
 statue, 4848  
**Beard, Dan**, organised boys' society, 3583  
**Bearded vulture**, picture, 1841  
**Bearing rain**, use, with picture, 158, 159  
**Beat**, in sound, 4918  
**Beatrice, Dona**, in Mexican legend, 5231  
**Beatrice**, who died for her religion, 964  
**Beaufort, Margaret**, Henry VII.'s mother, 841  
**Beauharnais, Josephine**, Napoleon's wife, 4356  
**Beaujeu, Captain**, at the battle of Ft. Du-  
 quesne, 884  
**Beaumont, Francis**, poet, 3330  
**Beauregard, Gen.**, at Bull Run, 2013  
 attacks Fort Sumter, 2012  
 succeeds to Johnston's command, 2013  
**Beauty**, can we make ourselves beautiful, 5381  
 what it is, 1993  
**Beauty and the Beast**, story, with pictures,  
 2735  
**Beaux, Cecilia**, an artist, 4152  
**Beaver**, description, 4818  
 dwelling, 5413  
 how it is hunted, 2732  
 how the word is derived, 5233  
 its life-story, 666  
 pictures, 51, 675, 2732  
 play of young, 5480  
 skin used for measuring, 5150  
**Bechuanaland**, in South Africa, 1768  
**Becker, Charlotta**: see Poetry Index  
**Becket, Thomas a**, murder, 594, 2704, 4713  
 pictures, 595  
**Bequerel, Antoine Henri**, physicist, 640  
**Bed**, damp, why it is dangerous, 3378  
**Bede, The Venerable**, 430, 4709  
 how he translated the Gospel of St. John,  
 4336; picture, 4335  
**Bedford, John, Duke of**, 120  
**Bedivere**, Sir, knight of King Arthur, 3312  
**Bedlam**, how the name arose, 4532  
**Bedouins**, pictures, 3879  
**Bee**, can distinguish colours, 4216  
 compared with the ant, 2941  
 how it carries pollen, 45  
 its brain, 3563  
 its humming, 909  
 its life-story, with pictures, 2815  
 its sting, 780, 3974  
 pictures, 51, 2328  
**Bee in his bonnet**, what it means, 5533  
**Beech-tree**, description, 5446  
 picture, 3181  
**Beef**, its value compared with cheese, 2793  
 production in U. S., 2658  
**Beef-tea**, its value as food, 3113  
**Bee-line**, what it means, 5534  
**Bee-orchis**, description, 4423  
 picture, 4422  
**Beet**, cultivation for sugar, 693  
 how to sow, 3176  
 how to treat and store it, 4353  
 making it into sugar, pictures, 694  
 plantation of beets, picture, 693  
**Beethoven, Ludwig von**, his life, 3249; pictures,  
 3243, 3251  
 wrote music, 1367, 3133, 3968  
**Beetle**, foe of the rubber-tree, 5677  
 its wonderful eye, 3260  
 pictures, face 3140; in colour, 3411  
 that causes the death-tick, 3142  
 why we fear it, 4233  
**Beetroot**: see Beet  
**Begbie, Harold**, poems: see Poetry Index  
**Beggars, The**, who they were, 3460

# INDEX

- Begonia**, how it got its name, 5115  
how to treat, 3398
- Behistun**, inscription on rock, 4972, 5060
- Behring, Vitus**, explorer, 3630, 4722  
visited Pacific coast, 2178  
voyages of, 4041
- Behring Straits**, 3630
- Bel**, temple of, picture, 4975
- Belcher, Sir Edward**, picture, 4725
- Belfort**, town in France, 2396
- Belgae**, Keltic tribe, 3457
- Belgium**, became a kingdom, 3464  
flag, picture in colour, face 1640  
its history, 3455  
its towns and industries, 3464  
map, 3463
- Belgrade**, capital of Serbia, 3222, 3224  
picture, 3218
- Belin, Monsieur**, slave's devotion, 1914
- Belisarius**, Roman commander, 2912, 3152  
with his guide, picture, 3153
- Belit**, god of Assyria, 4980
- Bell**, electric, how to fit, 2567
- Bell**, name the Brontës wrote under, 2598
- Bell, Graham**, patented a telephone, 4317
- Bell, Henry**, and the steamboat, 2470  
his steamboat, the Comet, picture, 2469  
portrait, 2467
- Bell, John**, nominated for presidency, 2010
- Bell, John**, work on Albert Memorial, 5004
- Belladonna lily**, 5272
- Bell-bird**, its call, 1748; picture, 1736
- Bellflower**, 2042, 4112
- Bell-glass**, how to use, 3176
- Bell Rock lighthouse**, 738
- Bell the cat**, fable, and picture, 463  
what it means, 5533
- Bellini, Vincenzo**, composer, 3252
- Bellini family**, artists, 1256
- Beloochie**, tribe, picture, 3939
- Belshazzar**, king of Babylon, his feast, 4984
- Beluga**, name for the white whale, 1088
- Ben Hur**, story of the book, with picture, 5225
- Benares, king of**, and his ministers, story, and picture, 4927
- Benedict, St.**, his life, and picture, 1012
- Bengal**, how it became British, 1704  
sugar-cane grown, 693
- Bennett, William Cox**: see Poetry Index
- Bennington**, battle of, 988
- Bent grass**, pictures, 2980
- Bentham, Jeremy**, life and aims, 212, 214; portrait, 211
- Bentivoglio, Cardinal**, a patron of art, 4956
- Benne**, tributary of the Niger, 4254
- Benzine**, its many compounds, 1873  
takes grease out of material, 4456
- Benzoline**, inflammable liquid, 1280
- Beranger, Pierre dei**: see Poetry Index
- Berengaria**, queen of Castile, 4717
- Bergen**, fish-market of Norway, 3602
- Bering, Vitus**: see Behring
- Berkeley**, what the name means, 5387
- Berkeley, George**, portrait, 4625  
what he taught, 4621
- Berkeley, Lord**, a proprietor of New Jersey, 521
- Berkeley, Sir William**, as governor, 525
- Berkshire**, what the name means, 5387
- Berlin**, capital of Germany, 2578  
picture, 2746  
what kind of city it is, 2579, 2747
- Berlin, Treaty of**, signed, 3222
- Bermudas**, British islands, 1878
- Bernadotte**, Swedish royal family, 3598
- Bernard of Clairvaux, St.**, and the Second Crusade, 1589  
his life, 3984; pictures, 3981, 3989  
wrote hymns, 1995
- Bernardine nun**, digging, picture, 2395
- Berne**, capital of Switzerland, 2962, 2964  
picture, 2963
- Bernini, Giovanni Lorenzo**, sculptor, 4161
- Berries**, new varieties, 2776
- Bertala**, in story of a water nymph, 5519
- Bertha and Undine**, story, 4005
- Berylline**, in the Blue Bird, 5083
- Bessmer, Sir Henry**, invented converter, 5540
- Betrothed, The**, story of the novel, 1493
- Bevel**, use, with picture, 1923
- Beverly**, what the name means, 5387
- Bible**, contains the finest English writing, 2330
- Bible**, means book, 4603  
translated into German, 2627
- Bierstadt, Albert**, his "Yosemite Valley," 4149
- Bicarbonate of lime**, 1569, 5250
- Biceps**, arm muscle, 2626; picture, 2627
- Bichromate battery**, with picture, 1076
- Bicorneave**, what it means, 1384
- Bicycle**, how it is made, pictures, 2836  
how it moves without pedalling, 89  
how to clean it, 4456  
how to mend a puncture, 4249  
how we got it, 2835  
why it keeps upright, 2878
- Biddenden maids**, legend, 4277
- Bienna, Lake**, in Switzerland, 2960
- Biennial**, what it is, 719, 3734
- Big Ben**, of Westminster, story of, and picture, 1536, 1540
- Bight**, a coil in a rope, 235
- Bilberry**, 4839; picture, 4836
- Bile**, substance in the body, 2345, 2346
- Bilge**, of a ship, 4564
- Bill of Rights**, passed, 1029
- Billion**, a number, 782, 1932
- Bingo**, game, 2572
- Biology**, the study of life, 2504
- Birch**, pictures, 3182  
spray of, with picture, 5444, 5446
- Birchleg**, party in Norway, 3594
- Bird of Paradise**, 53, 1738; pictures, 1741
- Bird-eating spider**, 3303; picture, 3301
- Bird-girl**, with golden wings, story, 1796
- Birds**, a Christmas-tree for birds, 2251  
are warm-blooded, 545  
birds used to have teeth, 1963, 2098  
build their nests by instinct, 914  
cedar-birds, 5437  
courting-habits, 1518  
eggs, in colour, 1744  
familiar bird friends, 2209  
flying, 508  
how long they live, 2328  
how they find their way, 511  
how they fly, 1423, 2674, 3540  
how they protect themselves, 1737  
how to make a bird museum, 4668  
nesting-boxes for, with pictures, 5351  
of beauty, 1737, 1739, 1741-43  
of long ago, 47, 3680  
of the ocean, 1625  
that are shot for sport, 1517  
that cannot fly, 1423  
that forgot how to fly, 1425  
that hunt, 1839  
that hunt in the sea, 1627, 1629, 1631  
that live on inland waters, 1521  
that run, swim, or climb, 1431  
that serve us, 1513  
that swim and climb, 1951  
the singing birds, 2051  
their ears, 155  
their eggs, 1780  
their eyes, 4217  
their origin, 46, 663  
their wonderful colours, in colour, 1741  
why does a bird forsake its nest if its eggs are touched? 5575
- Pictures of Birds**  
singing, 2053, 2055, 2059  
what wakes them up, 3435  
why caged birds' claws are cut, 5168  
why they cannot fly if dropped from a height, 3237  
why they cast their feathers, 2329  
why they do not fall, 916, 3955
- Birdseye view**, what it is, 62; picture, 63
- Bird's-nest orchis**, 3830, 3951
- Birgus latro**, a crab, 2586
- Birkenhead**, the men of the Birkenhead, story, with picture, 1802, 1804
- Birmingham**, how the name has changed, 5387  
manufactures, 1029
- Birs Nimroud**, mound, 4983; picture, 4984
- Birthing**, what it means, 3763
- Biscuit**, means twice cooked, 4603
- Bishop, Sir Henry**, composed songs, 3741
- Bishop, The**, rock, picture, 1058
- Bismarck, Prince von**, and Germany's African colonies, 2756  
his fall from power, 2748  
his policy, 2579

# INDEX

- Bismarck, Prince von**, his statue in Berlin, 2748  
 picture, 2577, 2756  
**Bismarck Archipelago**, 2756  
**Bismarck Island**, houses, picture, 1465  
**Bison**, wild animal, 269, 1242  
**Bites**, how to treat bites, 3397  
**Bito and Cleobis**, story, 1301, 2301  
**Bitter almond**, its uses, 1966  
**Bitterling**, fish, 2681  
**Bittern**, bird, 1954; picture, 1953  
**Bitter-sweet**, berries, 4493  
 description, 4495  
**Bitter-sweet** (woody nightshade), description, 4289  
 picture, 4286  
**Bivalve**, has a shell in two halves, 2588  
**Biwa, Lake**, in Japan, 372  
**Bizet, Georges**, composed *Carmen*, 3252  
**Black**, colour, how to make, 1935  
 why white is cooler than black, 4340  
**Black-backed gull**, 1628; picture, 1629  
**Blackbeard**, a pirate, 523  
**Black-beetle**, name of the cockroach, 3141  
**Blackberry**, pictures, 651, 3895  
**Blackbird**, 2060, 2328  
 eggs, pictures, 1744; in colour, 3894  
 with young birds, picture, 2055  
**Blackboard**, how to make, 5530  
**Blackcap**, bird, 2210, 2054  
 egg, picture in colour, 1744  
 pictures, 2053  
**Black-cock**, 1518; picture, 1517  
**Black currant**, picture, 651  
**Black Death**: see Plague  
**Black Diamond**, story, and picture, 3579  
**Black Dwarf, The**, story of the novel, 1495  
**Blackfeet**, Indian tribe, 5152  
**Black Forest**, 2754; picture, 2751  
**Black-game**: see Black-cock  
**Blackguard**, change of meaning, 4531  
**Black-headed gull**, 1628; picture, 1629  
**Black-headed nun**, bird, 1748  
**Black people**, reason for their colour, 42  
**Blackpool**, sea-wall, picture, 4432  
**Black Prince**: see Edward  
**Black rat**, 771  
**Black saltwort**: see Sea milkwort  
**Black Sea**, 3149, 3631  
**Blacksmith**, how he makes a horse's shoe and  
 puts it on, pictures, 742  
**Black swans**, picture, 1521  
**Black tern**, picture, 1629  
**Blackthorn**, 3450, 4110  
 picture, 3450  
**Blackthorn**, garden game, 1072  
**Blackwall hitch**, and picture, 3283  
**Bladder-nut**, picture, 4835  
**Blake, Robert**, admiral, 1026, 1892, 3463  
**Blake, William**: see Poetry Index  
**Blacklock, Ralph A.**, art of, 4152  
**Blanc, Mont**, peak of the Alps, 2392, 2959  
**Blanco, Cape**, in West Africa, 4262  
**Blank verse**, has no rhyme, 94  
**Blarney stone**, kissing the, 5467  
**Blashfield, E. M.**, an artist, 4152  
**Blaxland**, crossed the Blue Mountains, 355  
**Blask, fish**, 2682; picture, 2683  
**Blask House**, story of the novel, 2433  
**Bleeding**, how to stop, 1581, 5110  
**"Bleeding Kansas"**, nickname of Kansas, 3536  
**Blenheim**, battle of, 565, 2530, 2540  
**Blenny**, fish, 1411  
**Blind**, the, can a blind man's touch take the  
 place of his sight? 5498  
 reading invented for, 1982  
 their hearing, 3863  
**Blindman's breakfast**, game, 5000  
**Blindman's buff**, game, 2571  
**Blindman's stab**, game, 5000  
**Blind partners**, game, 5000  
**Blind-worm**, belongs to the skinks, 1219  
**Blitz, sea**, picture, 5192  
**Blockade** of Confederate ports, very effective,  
 2018  
**Blots, Count of**, 2478  
**Blomidon, Cape**, picture, 5606  
**Blood**, blood-vessels, picture, 1445  
 how it becomes impure, 1788  
 how it circulates, 1580, 4183  
 how it gets strength from food, 2347  
 how it needs food, 3112  
**Blood**, its colour in our veins, 3090  
 its specific gravity, 3816  
 its temperature, 859, 4549  
 red cells, picture, 1386  
 the red cells, 1383  
 the white cells, 1441  
 what happens when we bleed, 4828  
 white cells, picture, 1446  
 why it must be pure, 1789  
**Bloodhound**, its scent, 502; picture, 501  
**Blood pheasant**, its spurs, 1515  
**Bloody Mary**, name of Queen Mary, 2534  
**Blotter**, how to make, and picture, 4247  
**Blotting paper**, why it absorbs ink, 2074  
**Blowfly**, name for the bluebottle, 3147  
**Blucher, Field-marshal**, 2277, 2636, 4364  
 Blucher after Waterloo, picture, 4361  
**Blue**, primary colour, 4508  
**Blue beard**, flower, 1350  
**Blue Beard**, when the story got its present  
 form, 1467  
**Blue-beech**: see Hornbeam  
**Blue-bell**, description, 4514, 5272  
 how it got its name, 5115  
 its family, 5272; pictures, 2042, 4612  
**Blueberry**: see Huckleberry  
**Blue Bird**, the, story of, 5083  
**Blue Bird, The**, story, and picture, 3206  
**Bluebottle**: see Cornflower  
**Bluebottle fly**, 3144; picture, 3147  
**Blue clematis**, picture, 5276  
**Bluecoat School**, its founder, 845  
**Blue fleabane**, picture, 5188  
**Blue-gown**, name for a beggar, 1650  
**Blue Mountains**, in Australia, 355, 1356  
**Blue Nile**, river in Egypt, 281, 4260  
**Blue owl-pigeon**, picture, 2213  
**Blue shark**, 2444; picture, 2445  
**Blue-stocking**, what it means, 5533  
**Blue tit**: see Tomtit  
**Boa-constrictor**, 1374; picture, 1375  
**Boadicea**, British queen, 196  
 statue, picture, 197  
**Boar**, wild, its strength, 384; picture, 383  
**Board**, its centre of gravity, 3835  
**Board, Ernest**, his picture of the departure of  
 John and Sebastian Cabot, 843  
**Boat**, how to make a fleet, and pictures, 3824  
 little boat that moves in the water, 5664  
 making paper boat, and picture, 1925  
 the first boats, 73  
 why a boat capsizes, 3828  
**Boatbill**, bird, 1955; picture, 1953  
**"Bobbies"**, nickname of London police, 5382  
**Boccaccio, Giovanni**, life and writings, 5219;  
 portrait, 5217  
**Bodmin**, hanging the mayor, tale, 1320  
**Body**, and air-pressure, 2229, 3944  
 comparison with a nation, 5282  
 covered with muscle, picture, 2624  
 how alcohol affects it, 243  
 how it is always working, 3550  
 how it is built up, 2437  
 how it is kept cool, 1912  
 how it makes use of food, 2695  
 how it is warmed, 4114, 4183  
 its centre of gravity, 3836  
 why we have bones, 3546  
**Boeotia**, state of Greece, 5124, 5129  
**Boer War**, 1770  
**Boers**, Dutch farmers in South Africa, 1769  
**Bog bean**, 4112, 5032; picture, 5030  
**Bog moss**: see Sphagnum  
**Bog myrtle**, picture, 5037  
**Bogota**, capital of Colombia, 4574  
**Bohemia**, state of Austria, 2576, 2858  
 struggle for liberty, 2852  
**Bohemund of Tarentum**, 1587, 1588  
**Boiling**, why does it make potatoes soft and  
 eggs hard, 5483  
**Boiling-point**, how it is decided, 512  
**Boker, George Henry**: see Poetry Index  
**Bolan Pass**, in India, 1544  
 picture, 1703  
 railway through the pass, 3933  
**Boleyn, Anne**, wife of Henry VIII., 844, 2534, 2708  
**Bolivar, Simon**, liberator of South America,  
 4506, 4572  
**Bolivia**, flag, picture in colour, face 1640  
 state of South America, 4500, 4572  
**Bologna**, town of Italy, 3018



# INDEX

**Bologna, Giovanni**, sculptor, 4161  
**Bombardier beetle**, 3416  
**Bombay**, English possession, 1702, 3358  
 port of India, 1548  
**Bonaparte, Jerome**, stole The Waterseller, 760  
**Bonaparte, Joseph**, king of Spain, 3360  
**Bonaparte, Louis**, king of Holland, 3463  
**Bonar, Dr. Moratius**: see Poetry Index  
**Bone**, a growing and a grown-up bone, picture, 2437  
 bones of a finger, picture, 2440  
 how it is made and what it does, 1384, 2439  
 how our bones require salts, 2698  
 why we have bones, 3546  
**Bone marrow**, tissue of our bodies, 1384  
**Boneset**, description, 5032  
 picture, 5033  
**Bone to pick**, what it means, 5533  
**Bonhomme, Noel**, French Santa Claus, 2146  
**Bon Homme Richard, the**, and the Countess of Scarborough, 2898  
 and the Serapis, 2898  
**Boniface, St.**, life, 3984; picture, 3983  
**Bonn**, town of Germany, 2752  
**Bonner, Robert**, editor New York Ledger, 2043  
**Bonnet, Daniel**, his noble son, 1734  
**Bonnie Annie**, tune of D'ye ken John Peel? 5494  
**Book of Marvels**, old French book, 55  
**Book of the Dead**, 4782, 4785, 4788

## BOOKS

### Child's Story of Famous Books

The following are the actual headings of the chapters in this section; the separate entries appear below and in their proper places in the index.

A Fight with a Cannon, 5593  
 A Good and Happy Girl, 5501  
 A King on Kingship, 5360  
 A Winter's Tale, 550  
 All's Well That Ends Well, 314  
 As You Like It, 629  
 Barnaby Rudge, 2761  
 Ben Hur, 5225  
 Bunyan's Pilgrim's Progress, 1115, 1135  
 Castle (the) on the Cliff, 5597  
 Charles O'Malley, 2903  
 Chaucer's Canterbury Pilgrims, 437  
 Columbus sees America, 5506  
 Comedy of Errors, 630  
 David Copperfield, 2827  
 Don Quixote's Adventures, 899, 949  
 Gulliver's Travels, 1309  
 Gwy Mannering, 1603  
 Hamlet, Prince of Denmark, 479  
 Handy Andy, 3049  
 Henry Esmond, 3265  
 Iliad, the Odyssey, and the Æneid, 67  
 Ivanhoe, 1645  
 Jacob Faithful, 2197  
 John Halifax, Gentleman, 3923  
 King Lear, 633  
 Little Women and Good Wives, 5143  
 Martin Chuzzlewit, 2637  
 Masterman Ready, 2025  
 Measure for Measure, 549  
 Merchant of Venice, 316  
 Midshipman Easy, 2200  
 Midsummer Night's Dream, 313  
 Much Ado About Nothing, 551  
 Nicholas Nickleby, 2633  
 Old Mortality, 1760  
 Othello, the Moor of Venice, 473  
 Peter Simple, 2028  
 Rob Roy, 1599  
 Robinson Crusoe, 1231  
 Romeo and Juliet, 477  
 Round the World in Eighty Days, 4965  
 Scott's Waverley Novels, 1493  
 Spenser's Faerie Queene, 687  
 Tartarin in the Alps, 4655  
 Tartarin of Tarascon, 4537  
 The Abbe Constantin, 4761  
 The Antiquary, 1649  
 The Boy who asked for More, 2551  
 The Chimes—a goblin story, 2285  
 The Cloister and the Hearth, 4017  
 The Count of Monte Cristo, 4325, 4407  
 The Cricket on the Hearth, 2283

**Books**, The Daughter of King Charles, 6359  
 The Day of the Comet, 5509  
 The Death of a Queen, 5502  
 The Fate of Dombey and Son, 2554  
 The Gladiator's Appeal, 5504  
 The Heart of Midlothian, 1757  
 The History of Pendennis, 3473  
 The Last of the Mohicans, 177  
 The Marble Faun, 5432  
 The Newcomes, 3603  
 The Old Curiosity Shop, 2757  
 The Old Man named Scrooge, 2159  
 The Overthrow of Napoleon, 5362  
 The Plague-stricken Home, 5596  
 The Song of the Kettle, 5508  
 The Stories of Charles Dickens, 2431  
 The Swiss Family Robinson, 1915  
 The Taming of the Shrew, 635  
 The Tempest, 315  
 The Tilters of the Sea, 4171  
 The Virginians, 3363  
 The Water-Babies, 3801  
 Tom Brown's Schooldays, 4063  
 Twelfth Night; or, What You Will, 475  
 Twenty Thousand Leagues Under the Sea, 4985  
 Two Gentlemen of Verona, 631  
 Waverley, 1496  
 Westward Ho! 3661  
**Books**, chained books, picture, 3567  
 how a book is made, pictures, 888  
 how to draw an open book, with picture, 2415  
 the earliest books, 3863  
 the wonder book, 5552  
 the wonder of a book, 887  
 to cover with paper, 5523  
 trick you can play with a book, 1073  
**Bookshelves**, how to make, with pictures, 1617  
**Boom**, to prevent boats passing, pictures, 4435  
**Boomerang**, natives throwing it, picture, 354  
 why it comes back, 3438  
**Boone, Daniel**, explores Kentucky, 1820  
**Boot**, how a boot is made, and pictures, 3103  
 how to clean boots, 4456  
 pair of old boots, story, and pictures, 4275  
**Booth, Edwin**, statue of Coriolanus, 4844  
**Booth, John Wilkes**, kills Lincoln, 2022, 3536  
**Borage**, family of plants, 4112  
**Bordeaux**, town of France, 2399  
**Boreas**, god of the north wind, 2610  
**Borglum, Gutzon**, sculpture of, with picture, 4840, 4850  
**Borglum, Solon**, sculpture of, 4850  
**Boris**, tsar of Russia, 3628  
**Borneo**, island in Indian Archipelago, 3005  
**Borough**, what names come from it, 4907  
**Borromeo, St. Carlo**, his self-sacrifice, 1179  
 his statue, picture, 1180  
**Born**, king of Gaul, 869  
**Borsippa**, an old city of Babylonia, 4984  
**Borup, George**, companion of Peary, 5212  
 discovered Greely's old camp, 5214  
**Boscawen, Admiral**, at Louisburg, 885  
**Bosnia**, became a kingdom, 3150  
 conquered by Mohammed II., 3156  
 its history, 3223  
 national costume, picture, 3225  
 province of Austria, 2860  
**Bosphorus**, strait, 3149, 3224, 3874  
**Boston massacre**, causes of, 982  
 picture, 982  
**Bostwick, Helen**: see Poetry Index  
**Boswell, James**, his life of Johnson, 4679  
 portrait, 213  
 Rousseau and Boswell, 211  
**Bosworth Field**, battle of, 756  
**Botany Bay**, convict settlement, 355, 1356  
**Bot-ty**, 3262; pictures, 3257  
**Bothnia, Gulf of**, part of Baltic Sea, 3592  
**Bothwell, James Hepburn, Earl of**, married Mary Queen of Scots, 3088  
**Botocundo Indians**, of Brazil, picture, 4503  
**Botta, Monsieur**, Assyrian discoveries, 4977  
**Botticelli, Sandro**, life, 4960; portrait, 4945  
 picture of Madonna and children, 4589  
**Bottle**, how a glass bottle is made, pictures, 1174  
 how to clean bottles, 4456  
 musical instrument from old, 5448  
**Bottle-nose whale**, 1082  
**Botzaris, Mark**, Greek leader, 3219

# INDEX

- Bouch, Sir Thomas**, built Tay Bridge, 20  
**Boudcault, Dion**, wrote *The Wearin' o' the Green*, 3743  
**Boudoir**, what it means, 4603  
**Bougainville, Louis A. de**, discovered Samoa, 2190  
**Boughton, G. H.**, his picture of Dutch lasses, 3461  
 his picture of Milton and Marvell, 3337  
**Boulton, Matthew**, made steam-engines, 610, 655, 2470  
**Bounce about**, garden game, 1072  
**Bournville**, garden city, 2875  
**Bowel**, how it is made and works, 2345  
**Bowell, Sir Mackenzie**, as premier, 4106  
**Bower-bird**, its life-story, 1745  
**Howhead whale**: see Right whale  
**Bowles, Miss**, and her dog, picture by Reynolds, 4582  
**Bowles, William**: see Poetry Index  
**Bowline knot**, and pictures, 235, 236  
**Bowls**, garden game, 1072  
**Bowring, Sir John**, his work, 2000  
 portrait, 1999  
**Bows and arrows**, game, 3516  
**Bowspit, of a ship**, 3913, 4565  
**Box**, right way to draw a box, 1693  
**Boxer rising in China**, 114, 368  
**Boxer, the**, and Enterprise, 2902  
**Boy**, a boy's love for his mother, story, 4071  
 at the giant's castle, story, and picture, 713  
 boy and his dog, picture, 763  
 boy and the ambassador, story, and picture, 319  
 boys and the frogs, fable, and picture, 2303  
 dead boy, in the *Canterbury Tales*, 443  
 gallant deed of a boy king, story, 3254  
 who became a king, story, 5075  
 who changed into a toy soldier, story, and pictures, 5071  
 who died for the Republic, with picture, 5512  
 who forced back an army, story, 320  
 who lost his shadow, 5693  
 who saved a crew, story, 3884  
 who saved his family, story, 1734  
 who saved the boat, story, 4178  
 who saved the hamlet, story, 2547  
 who slept in the king's chair, 4642  
 who took a man's place, story, 4010  
 who walked to China, 54  
 who would not fight against freedom, story, 1654  
 whom France forgot, story, 330  
 why a boy's voice breaks, 4827  
 why boys are stronger than girls, 2456  
**Boy scouts**, hints for boy scouts, 4032  
 history of movement, with pictures, 3583  
**Boysars**, Russian nobles, 3628  
**Boyle, Robert**, scientist, his law about gas pressure, 3948  
 life, 2114  
 portrait, 2113  
**Boyle, Sarah Roberts**: see Poetry Index  
**Boyne**, battle of the, 1029  
 battlefield of, 5462  
**Brabant, dukes of**, in Netherlands, 3458  
**Bracket**, fretwork, with pictures, 5293  
**Braddock, General Edward**, death, 884  
 expedition of, with pictures, 882  
 falls to drive French from Ohio Valley, 3622  
**Bradley, James**, life, 1662; portrait, 1655  
**Bradshaw, John**, his power in the Commonwealth, 1026  
 how Charles II. treated his body, 4640  
 portrait, 1896  
**Brady, Nicholas**, wrote psalms, 1997  
**Bragg, General**, at Chickamauga, 2018  
**Bragi**, god of poetry, 3581  
**Braham, John**, famous tenor, 3740  
**Brahe, Tycho**, life, 1657; portrait, 1655  
**Brahman and the goats**, 5421  
 and the pots, 5421  
**Brahmanism**, religion of India, 2995  
**Brahmaputra River**, rises in Tibet, 3936  
**Brahmas**, kind of fowl, 1513  
**Brahmins**, Hindoo priests, 1552, 1699  
**Brahms, Johannes**, composer, 3252  
**Brain**, controls sight, 3543  
 effect on working of the mind, 4941  
 eye is part of the brain, 3978, 3977  
 feels no pain when cut, 4121  
**Brain**, how alcohol affects it, 4344  
 how bad air affects it, 1789  
 how it controls digestion, 3109  
 how it controls the heart, 1583  
 how it is protected, 2542  
 how thinking makes it heavier, 1584  
 in sleep, 3379  
 its delicacy, 243  
 its growth, 4596  
 its shape, 4444  
 its size, 4596  
 needs food, 1132  
 sends messages through nerves, 3563  
 the mystery of the brain, 3715  
 the parts of the brain, 3775  
**Pictures of Brain**  
 grey matter magnified, 3721  
 inside and outside of our brains, 3717  
 man's brain compared with that of other creatures, 3715  
 section across one side, 3721  
 showing Broca's area, 3779  
**Brainerd, David**, his life, 3484  
**Brakespear**, gave Ireland to Henry II., 5460  
**Bramante, Donato**, portrait, 4945  
 story of his life, 4950  
**Brambling**: see Mountain finch  
**Bran**, covering of the wheat grain, 2924  
**Brandenburg**, absorbed Prussia, 2530  
 attacked by Swedes, 2530  
**Brandon, Canada**, description, 5368  
**Brandy-bottle**, the yellow water-lily, 4960  
**Brandywine**, battle of the, 988  
**Brass**, from copper and zinc, 288, 1870  
**Brassey, Thomas**, built railways, 616  
**Brazil**, became independent, 3360  
 brought wealth to Portugal, 3354  
 Botocudo Indians, picture, 4503  
 discovery of, 258  
 flag, picture in colour, face 1640  
 how it became a republic, 4506  
 Indian milkman, picture, 4503  
 its connection with Portugal, 4568  
 its people, 4567, 4568  
 its position and size, 4500  
 its products and trade, 4567, 4568  
**Brazil nuts**, 1966; picture, 1967  
**Bread**, contains much water, 1172  
 crumb, through microscope, picture, 2324  
 high price of, 5644  
 how it is made, pictures, 1151  
 how we get our bread, 1143, 2923  
 how yeast makes bread rise, 1872, 3241  
 proportion of water in it, picture, 1171  
 why it is called the staff of life, 2078, 5644  
 why its price changes, 6170  
**Bream**, fish, 2682; picture, 2683  
**Breathing**, air passages in the mouth and throat, picture, 1635  
 how it is affected by light, 1909  
 how it varies, 1787  
 how we breathe, 1634; with pictures, 1637  
 what happens to the breath we breathe out, 4442  
 what it is, 285, 3942  
 what the breathing centre is, 1638  
 why our breath rises in the air, 2233  
 why we cannot breathe under water, 3763  
 why we cannot see our breath on a warm day, 154  
 why we get out of breath running, 1131  
**Breccia**, rock, 5198  
**Brechan, St.**, Welsh king, 4277  
**Breckinridge, John C.**, nominated as president, 2010  
**Brecon**, how it got its name, 5382  
**Breeches buoy**, use, with picture, 4430  
**Bremen**, its shipbuilding, 2750  
 joined Hanseatic League, 2526  
**Brennan, Louis**, invention of gyroscope train, 89, 90  
**Brennus**, besieged Rome, 3554  
**Brer Rabbit**, and Brer Fox, 187  
 and his riding-horse, 4643  
 and Miss Cow, 183  
 and Mr. Bear, 187  
 and the tar-baby, 3861  
 Brer Tortoise helps Brer Rabbit, 4702  
 helps Brer Tortoise, 4703  
 Miss Goose's washing, 4703

# INDEX

- Brer Rabbit**, the great race of, 188  
tricks Brer Fox, 4522
- Brescia**, where Bayard died, picture, 129
- Breslau**, city of Prussia, 2752
- Brest**, port of France, 2399
- Bretons**, their dialect, 2400
- Brett, Jacob**, laid a cable, 2474; portrait, 2467
- Brewer, Ebenezer**: see Poetry Index
- Brewster, Sir David**, improved the microscope, 2320
- Brian Boru**, his harp in Dublin, 5461  
Irish king, 2029
- Briarwood**, what it is, 5524
- Bribe**, man who refused a bribe, story, 4557
- Brick**, how to blow it over, with picture, 4457  
how to see through it, with pictures, 4033  
story of a brick, with pictures, 3037  
what to do with bricks, with pictures, 4352  
with ancient writing, picture, 5099
- Bride of Lammermoor, The**, story of the novel, 1495
- Bride of the Wandering Prince**, story, 1190
- Bridge**, expands in the sun, 2621  
how bridges are made, 19  
how some famous bridges were made, pictures, 21  
how to make, of reels and bricks, 4352  
the different kinds, 19  
what the bridge of a ship is, 4564  
why bridges are arched, 2328  
why it sways, 4744
- Bridge-board**, game, 2572
- Bridge of Sighs**: see Venice
- Bridgetown**, Barbados, its schools, 1878
- Bridgewater Canal**, opened, 1096
- Brians, Lake**, in Switzerland, 2960
- Brig**, what it is like, 3915; picture, 3914
- Brigantine**, 3915; picture, 3914
- Bright, Charles Tilston**, laid the Atlantic cable, 2474; portrait, 2467
- Bright, John**, and Cobden, picture, 3705  
his work as a reformer, 3703
- Brighton**, old woman at, tale, 1108
- Brill**, how many eggs it lays, 206
- Brisbane**, city of Queensland, 1360
- Britain**, discovered by Phœnicians, 279, 5122  
invaded by Julius Cæsar, 420  
its early animals, 50
- Britannia Bridge**, Menai Straits, 19
- British Army**, in Afghanistan, 3938
- British Columbia**, admitted, 4105  
as tourist-resort, 5611  
minerals in, 5599  
province of Canada, 1244
- British Empire**, in Africa, 1765  
outposts of, 1875  
the aim of its rule, 1880  
See also **British Isles, England, &c.**
- British Guiana**: see Guiana
- British Honduras**, in Central America, 1878
- British Isles**, climate, 50, 1860, 4323  
flag, 2333  
population, 1644, 2400
- Pictures of British Isles**  
map, lighthouses, and lightships, 4426  
relief map, 3822  
Union Jack, in colour, face 1640
- See also **British Empire, England, Scotland, Ireland, and Wales**
- British Museum**, Assyrian and Babylonian relics, 4972  
how it was built, 1162  
its Anglo-Saxon room, 428  
its prehistoric room, 192  
picture, 1159
- British Navy**, how the ships are watched from London, picture, face 3519
- British North America Act**, passed, 4102
- British people**: see English people
- Britons**, race in England, 196  
two British chiefs, picture, 197
- Brittany woman**, picture, 2395
- Brittle starfish**, its limy skin, 2342  
pictures, face 2335, in colour, 2337
- Broadway**, notes on, 4306
- Broca, Paul**, and the speech centre, 3779
- Brock, Sir Isaac**, governor, 4106  
in command of forces of Upper Canada, 3901
- Brocken**, mountain in Germany, 1724  
the Brocken and its shadow, picture, 1724
- Brockville, Can.**, appearance, 5426
- Broke, Captain**, commander of the Shannon, 1399, 2902
- Broken Hill**, New South Wales, 1362
- Broken limbs**: see Fracture
- Brome**, grass, pictures, 1336, 1337, 1338
- Bromine**, liquid element, 1290, 3093
- Brompton stocks**, 5270; picture, 5275
- Bronchi**, tubes leading to the lungs, 1636
- Brontë sisters**, life, 2596; portraits, 2593  
writing their stories, picture, 2597
- Brontosaurus**, fossil lizard, 18, 48  
possible existence, 5572  
restored, pictures, 44, 5571
- Bronze**, what it is, 1292, 1870
- Bronze Age**, 184, 1292
- Brooke, Sir William**, studied telegraphy, 2474
- Brook-lime**, plant, picture, 3831, 4968
- Brooklyn Bridge**, pictures, 25, 26
- Brooks, Thomas**, his picture, Shakespeare before Sir Thomas Lucy, 3333
- Broom**, flowers, 4610  
pictures, 4613, 4615
- Broom rape**, lives on other plants, 3830
- Brown, Dr. John**, and brains, 3780
- Brown, Ford Madox**, his picture of Oliver Cromwell, 1890  
picture of Chaucer, 3326
- Brown, H. K.**, sculpture of, 4850
- Brown, Jacob**, in Canada, 1399, 3901
- Brown, John**, attack on Harper's Ferry, 2010, 3536
- Brown, Neville Cooper**, portrait, 4627
- Brown ant**, its nest, 2944
- Brown bent grass**, picture, 2980
- Brown bread**, 1143, 2324
- Brown hairstreak**, a butterfly, 2992
- Browne, Frances**, her life, 1471  
wrote *Granny's Wonderful Chair*, 1043
- Brownie camera**, how to use it, with pictures, 4243
- Brownie of Snæfell**, legend, 2377
- Browning, Elizabeth Barrett**, her life, 3912  
poems: see Poetry Index  
portrait, 3907
- Browning, Robert**, his life, 3912  
poems: see Poetry Index  
portrait, 3907  
quotations from, 1573, 4596
- Bruce, James**, explored Abyssinia, 280  
his book, 282; pictures, 280
- Bruce, Michael**: see Poetry Index
- Bruges**, town of Belgium, 3455, 3458
- Bruises**, how to treat, 3397
- Brunel, Isambard Kingdom**, built the Great Western, 74, 2472  
helped with the Thames Tunnel, 616  
portrait, 2467
- Brunel, Sir Marc Isambard**, how he got his idea for the Thames Tunnel, 51, 2587
- Brunelleschi, Filippo**, his life, 2782  
portrait, 2779  
set egg on end, 5524
- Bruno, Giordano**, burnt to death, 1660  
his idea that all stars were suns, 5025  
his work, 1943, 2609
- Brush**, for pasting, picture, 333  
how to hold in painting, 254  
to use for painting, 253
- Brush-and-comb bag**, how to make, and pictures, 232
- Brush-turkey**, 1520; picture, 1519
- Brush-work**: see Drawing
- Brussels**, capital of Belgium, 3455, 3460  
pictures, 91, 3454
- Brussels sprouts**, 2971
- Brutus, Lucius Junius**, overthrew Tarquin, 413; picture, 415
- Brutus, Marcus**, killed Julius Cæsar, 421
- Bryant, William Cullen**, his life, 1478  
poems: see Poetry Index  
portrait, 1475
- Bryony**, black, picture, 4615
- Bubble**, what it is, 3095
- Buchan**, the store that never grew less, legend, 3208
- Buchanan, George**, tutor of Montaigne, 5220
- Buchanan, James**, as president, 2009, 2010, 3536  
picture, 3532
- Bucharest**, capital of Roumania, 3220
- Buckbean**: see Bog bean
- Bucket**: see Pail

# INDEX

- Buckingham**, derivation of name of place, 5387  
**Buckingham, George Villiers, Duke of**, 1887  
**Buckland, Frank**, how he was poisoned, 1374  
 story of him and an eagle, 1842  
**Buckland, William**, scientist, 854  
**Buckthorn**, sea, picture of, 6192  
**Bud**, how it gets colour, 4442  
**Buda-Pesth**, capital of Hungary, 2576, 2860  
 picture, 2855  
**Buddha**, Buddhist prayer-shop, picture, 371  
 his image, 370  
 his life and teaching, 2995  
 images, pictures, 371  
 portrait, 2995  
 spread of his doctrines, 1700  
 the crane and the wise crab, fable, 4224  
 the strongest thing, fable, 4223  
 the wise and foolish fairies, fable, 4223  
 teaching his pupils, picture, 2994  
**Buddhism**, became the religion of China, 110  
 religion of the Singhalese and Burmese, 1880  
 religion of Tibet, 3336  
 spread into Japan, 364  
 what it teaches, 2996  
**Buenos Ayres**, founded by Mendoza, 4505  
 its improvement, 4569  
 its progress, 4505  
 its trade, 4568  
 picture, 4570  
**Buffalo**, how the word is derived, 5233  
 lived in Manitoba, 1242  
 pictures, 277, 1831  
 seen by Quivira, 262  
 what kind of animal it is, 269  
**Bufo**, **Georges**, thought that life began in  
 the sea, 360  
**Buff-tip butterfly**, picture in colour, face 2983  
**Buff with a wand**, game, 5000  
**Bugle**, flower, picture, 4286  
**Bugloss**, belongs to borage family, 4112  
**Building**, how buildings are repaired, pictures,  
 3043  
 made of iron, 622  
 steel skeleton of a building, picture, 623  
 the Greeks as builders, 622  
 to withstand earthquakes, 3232  
 two wonderful buildings, pictures, 619  
 what holds a building up, 617  
 what the first buildings were like, 618  
**Bulb**, how to grow in bowls, 1816  
 how to treat, 573, 1610, 1716  
 must get moisture, 2254  
**Bulb mites**, picture, 3297  
**Bulbous buttercup**, 4190  
**Bulbul**, bird, 2060  
**Bulgaria**, flag, picture in colour, face 1640  
 its history, 3220  
 national costume, picture, 3225  
 ravaged by the Russians, 3154  
 subdued by Basil II., 3154  
**Bulgars**, where they settled, 3150  
**Bulksheads**, of a ship, 4566  
**Bull**, why red irritates it, 2800  
**Bull, John**, and National Anthem, 2331  
**Bullen, Frank**, tells of a fight between a  
 sperm-whale and an octopus, 2452  
 what he said of flying-fish, 207  
**Buller, Charles**, secretary to Lord Durham, 4099  
**Bull-fighting**, 3364; picture, 3359  
**Bullfinch**, its life-story, 2058  
 pictures, 1744, 2059  
**Bull-head**, fish, 2684; picture, 2683  
**Bull-rout**, fish, 2590  
**Bull Run**, battle of, 2013  
 second battle of, 2016  
**Bull-trout**, fish, 2680  
**Bulrush**, and seeds, pictures, 3833  
 name for reed-mace, 4963  
**Bulwarks**, of a ship, 4564  
**Bumps**, of the head, and character, 2544  
 why does a bump come instead of a dent  
 when we knock our heads, 5642  
**Bundle of rags**, game, 4144  
**Bung the bucket**, garden game, 1072  
**Bunker Hill**, battle of, 984  
**Bunsen battery**, with picture, 1076  
**Bunting**, bird, the different kinds, 2057  
 picture, 2059  
**Bunyan, John**, his life, 1725  
 poems: see Poetry Index  
 pictures, 1725, 1727  
**Bunyan, John**, wrote *The Pilgrim's Progress*,  
 1023, 1115  
**Buonaparte**: see Bonaparte  
**Buoy**, what it is, 4425  
**Burbank, Luther**, life and work, 2773  
 picture, 2777  
**Burdock**, what it is like, 4190  
**Burghley, Wm. Cecil, Lord**: see Burleigh  
**Burglars**, identified by finger-marks, 1864  
**Burgoyne, General John**, portrait, 981  
 the march of, 988  
**Burgum**, a friend of Chatterton, 5318  
**Burgundians**, settled in Switzerland, 2962  
**Burgundy, Duke of**, ruled Netherlands, 3458  
**Burke, Edmund**, his life and work, 211, 212, 214  
 throwing dagger on floor of the House, pic-  
 ture, 215  
**Burke, Robert**, explored Australia, 357  
 last days of Burke, picture, 358  
**Burleigh, William Cecil, Lord**, counsellor of  
 Elizabeth, 846, 2380; portrait, 2379  
**Burma**, tiger woman of Burma, story, 5316  
**Burmah**, country of India, 1880  
**Burn**, how to treat, 5110  
**Burna-buriah**, wrote Tel-el-Amarna tablets,  
 4984  
**Burne-Jones, Sir E.**, his picture of King Ar-  
 thur resting, 866  
**Burnet**, salad, 4418  
 picture, 4420  
**Burnett, Frances Hodgson**, life, 2048  
**Burney, Dr. Charles**, father of Fanny Burney,  
 2591; portrait, 213  
**Burney, Fanny**, destroying manuscripts, pic-  
 ture, 2595  
 life, 2591; portrait, 2593  
**Burning**, what it is, 5022  
**Burning-glass**, how it burns paper, 4181  
**Burns, James Drummond**, minister, 2000  
 poems: see Poetry Index  
**Burns, Robert**, his birthplace, picture, 3903  
 his life, 3906  
 meeting between him and Scott, picture, 3902  
 poems: see Poetry Index  
 portrait, 3907  
 portrait bust of, 4848  
 reading *The Winter Night*, picture, 3902  
**Burnside, General**, at Fredericksburg, 2016  
**Burnt almonds**, how to make, 3512  
**Burr, Aaron**, 1398  
**Bur-reed**, picture, 4964  
**Burrhus**, captain of Nero's guard, 530  
**Burrowjack**, blowing bubbles, picture in colour,  
 3645  
 gnome, in story, 2143, 3644  
**Burton, Decimus**, his arch at Hyde Park Cor-  
 ner, with picture, 5003, 5004  
**Burton Port**, the doctor of Burton Port, story,  
 468  
**Burying beetle**, 3264; pictures, 3261  
**Busby, Dr. Richard**, schoolmaster, 3903  
**Bushman**, tribe of South Africa, 1768  
**Bussell, Grace**, how she rescued the people on  
 a wreck, story, with picture, 4069  
**Bust**, in art, 4159  
**Butcher-bird**, name for the shrike, 1848  
**Buthus scorpion**, picture, 3301  
**Butter**, how it is made, 1144  
 how it is made, pictures, 1154  
 how microbes help in making, 904  
 why it is a good food, 2793  
**Buttercup**, family, 4110, 5270  
 how it got its name, 5115  
 pictures, 3735, 4191  
 resemblance to water crowfoot, 4961  
 various kinds, 4190  
**Buttercups and bees**, game, 3516  
**Butterfly**, British butterflies and moths, pic-  
 ture in colour, face 2983  
 butterflies and moths, 2983  
 coiled tongue of a butterfly, through the  
 microscope, picture, 2326  
 how to tell a butterfly from a moth, 2985  
**Butternut**, description, 4490, 5628  
 flowers, picture, 4489  
 tree, picture, 5629  
**Butterwort**, picture, 5036  
 See also *Common and Great Butterwort*  
**Button**, back buttons on coat, 5650  
 how to make from bootlaces, with picture,  
 5199

# INDEX

**Button**, how to sew on, with picture, 717  
**Buttonhole**, how to do buttonhole stitch, with picture, 457  
 how to finish off, with picture, 717, 718  
 how to make buttonhole scallops, with picture, 577, 578  
**Buttonwood**, description, 5440  
 picture, 5445  
**Buz**, game, 237  
**Bussard**, in deserts, 3590  
 life-story, 1844; picture, 1845  
**Byard's famous leap**, legend, 3208  
**Byrom, John**: see Poetry Index  
**Byron, Lord**, his life, 3909  
 loved the Greeks, 3220  
 poems: see Poetry Index  
 portrait, 3907  
**Byssus**, of the mussel, 2590  
**Byzantine Empire**, founded, 3150  
 included the Holy Land, 1585  
 ruled over by Baldwin II., 1589  
 ruled Roman world, 534  
**Byzantine style**, in painting, 4585  
**Byzantium**, called Constantinople, 534  
 taken by Constantine, 3150  
 taken by the Athenians, 5129  
 See also Constantinople

## C

**Cabbage**, how to grow, 2971, 3826  
**Cabbage butterfly**, 2998  
**Cabinet**, how to make from cigar boxes, and picture, 4880  
**Cabinet, The President's**, description of, 1596  
**Cable**, how to find where broken, 4550  
 laying a cable, pictures, 2475, 4551  
 laying of the Pacific, 3538  
 Nova Scotia to West Indies, 1878  
**Cablegrams**, how they are sent, 3521  
**Cabot, John**, voyages of, 258  
**Cabot, John and Sebastian**, picture, 843  
 voyages, 3617  
**Cabot, the**, war-ship, 2898  
**Cabral, Pedro Alvarez**, explorer, 4502  
**Cacao-tree**, gives us chocolate, 2237  
**Cachalot**: see Sperm whale  
**Cactus**, 3949; pictures, 3975  
 spineless and edible, 2776  
**Caddis-fly**, 3262; picture, 3259  
**Cade, Jack**, not an ignorant rebel, 5524  
**Cadiz**, expedition against, 5396  
 founded by Phœnicians, 5122  
 incidents in history of, 5331  
 port of Spain, 3361; picture, 3357  
**Cædmon**, early English poet, 430, 469  
**Caffeine**, its effect on the brain, 3316  
**Cage**, of cardboard, and picture, 2489  
**Calile aerolite**, picture, 2500  
**Cairo**, capital of Egypt, 4256  
 pictures, 4255, 4257  
**Calisson**, in bridge building, picture, 21  
**Cakes**, how to make, 3285  
**Calabria**, province of Italy, 3012  
**Calah**, discoveries, 4973, 4977; picture, 4975  
**Calais**, captured by Edward III., 750  
 how Philippa saved its citizens, 2533  
 lost by England, 846, 2068, 2535, 2704  
 statue of citizens, picture, 4169  
**Calceolaria**, how to treat, 1350, 1817  
**Calcium carbonate**, a common salt, 1798  
**Calcium sulphate**, how it is formed, 1800  
**Calcutta**, English factory set up, 1700  
 Jain temple, picture, 2231  
 largest city in India, 1548  
 the Black Hole of Calcutta, 1704  
**Caldcott, Randolph**, his pictures, 2641  
**Caldwell, William**: see Poetry Index  
**Calgary**, description of, 5370  
**Calhoun, John C.**, leader of South Carolina, 3535  
 portrait bust, 4844  
**California**, admitted as free state, 2008  
 Californian orange-grove, picture, 643  
 compromise concerning, 3536  
 how to telegraph there, 4313  
 settlement and admission, 1834  
**Caligula, Gaius Cæsar**, his cruelty, 4946; portrait, 529  
 Roman emperor, 529  
**Calisto**, was turned into a bear, 3314  
**Callao**, port of Lima, 4506, 4574  
**Caller Pit**, chest of, legend, 4277  
**Calling crab**, 2586  
**Calmar**, union of, 3594  
**Calorimeter**, picture, 4473; what it is, 4474  
**Calvin, John**, his teaching, 3460  
**Calyx**, of a flower, 1203  
**Camberwell beauty**, butterfly, 2992; picture in colour, face 2983  
**Cambridge**, what the name means, 5387  
**Cambyse**, king of Persia, his reign, 5058  
**Camel**, and poisonous plants, 5481  
 derivation of word, 5233  
 its life-story, 276, 2328  
 pictures, 51, 273, 1545, 3879  
 travels in the deserts, 269  
**Camellia**, how it got its name, 5115  
**Camelopard**, name for the giraffe, 5234  
**Camera**, a penny camera, and pictures, 5294  
 how it takes a picture, 39  
 how to photograph without, 2685  
 how to use a Brownie, and pictures, 4243  
 what the word means, 4603  
**Camillus, Marcus Furius**, 414, 3554  
**Chamomile**: see Chamomile  
**Campania**, province of Italy, 3012  
**Campanula**, how to treat, 1816, 2042  
 what the word means, 5115  
**Campbell, John**, vice-admiral, 4010  
**Campbell, Sir Colin**, relieved Lucknow, 1706  
**Campbell, Thomas**, as poet, 2578, 3738  
 poems: see Poetry Index  
 portrait, 3737  
**Camphor**, how it keeps moths away, 4121  
**Campion**, its family, 4111  
 picture, 5191  
**Campion, Edmund**, died for his faith, 5067  
**Canaan**, wars with Mesopotamia, 4974  
**Canada**, act of union, 3901  
 as Dominion, 4102  
 as English colony, 3897  
 as nation, with pictures, 4097  
 as province, 4098  
 attempt to win her over to the American Revolution, 3898  
 British North America Act, the, 4102  
 Canada, first mention of, 3618  
 Canada of to-day, 4106  
 Canadian Rockies, and beyond, with pictures, 5607  
 civil government, 3621  
 climate of the northwest, 5365  
 coal in, 5601  
 confederation of, 4102  
 education in, 4100  
 first code of laws, 3620  
 first Dominion Parliament, 4104  
 first legislative council, 4098  
 first parliaments, 3900  
 fisheries, 5601  
 flag, picture, in colour, face 1640  
 forests and their wealth, 5429, 5601  
 French Canada before the Conquest, 3617  
 fur traders and trappers, 5147  
 government of, 4102  
 governors-general, 4106  
 invasions of, 1398, 1399, 3398, 3901, 5148  
 its colonisation, 1246  
 its size, 1239  
 map, 1239  
 maritime provinces, 5601  
 mineral resources, 5599, 5601  
 mounted police, 4577  
 naming of, 3618, 5365  
 new west, the, 5365  
 parliament, 1242  
 pictures, 1241, 1243, 1245  
 products, 1244  
 Quebec Act, 3897  
 railroads in, 5365  
 Rebellion of 1837, 3901  
 reciprocity treaty, 4100  
 Riel Rebellion, the, 4104  
 St. Lawrence River, description of, with pictures, 5425  
 seigneurial system, 3621  
 story of Canada in the past, 1246  
 territories of, 4105  
 the Empire's wonderland, 1239  
 towns and physical features, 1240



# INDEX

- Canada**, war between England and France, 1094, 1247  
 well-known Canadians, 4469  
 wheat in, 5365  
 winter sports in, 5209  
 See also *Acadia*, *Hudson's Bay Company*, *Louisburg*, *Newfoundland*, *Quebec*, and names of individual provinces
- Canadian Pacific Railway**, 29, 1364  
**Canadian porcupine**, with picture, 669, 671  
**Canadian Rebellion**, suppressed, 3901  
**Canals**, can be seen in Mars, 2427  
 Erie, 1828, 3534  
 of France, 2392  
 of Holland, 3456  
 Panama, 2190, 3538; with pictures, 5631  
 Suez, 5631  
 views of, 5637  
 Welland, 4098
- Canal Zone**, leased by United States, with pictures, 2417, 5632
- Canaris, Constantine**, Greek leader, 3219  
**Canary**, 2058, 2328; picture, 2059  
**Canary Islands**, home of the canary, 2058  
**Canary-seed**, how to grow, 2563  
**Cannale**, oyster farm, picture, 3773  
**Candidate**, history of the word, 4603  
**Candle**, fired through door, with picture, 3466  
 how a candle is made, pictures, 2362  
 how to make a candle-shade, 100  
 is a box in which a candle has burnt lighter than a box and a candle? 5685  
 is a lighted candle in front of a mirror equal to two candles? 5642  
 what happens when it burns, 838  
 why blowing puts it out, 3691
- Canines**, the corner teeth, 2098  
**Cannes**, battle of, 5264  
**Cannas**, when to plant out, 3398  
**Cannibal**, word formed from Carib, 1877  
**Canning, Sir Samuel**, engineer, 2476  
**Cannon**, fight with a, 5593  
 how to make a toy cannon, and picture, 4245  
**Cannon-ball**, and immovable post, 2333  
 falling of, 5165  
**Canoes**, used in Central Asia, picture, 3937  
**Canonize**, its meaning, 1007  
**Canopus**, star, its size, 4438  
**Canova, Antonio**, his tomb, picture, 5008  
 portrait, 4945  
 sculptor, 4162, 4956  
**Cant**, how the word got its meaning, 4074  
**Cantabrian Mountains**, 3354  
**Canterbury**, New Zealand, 1458  
 not first Christian Church in England, 5524  
**Canterbury bell**, 719, 3278, 4112  
**Canterbury Tales**, 437  
**Cantilever bridge**, how it is built, with pictures, 20, 21
- Canton, China**, 116  
 lady of Canton, picture, 109  
**Canton, John**, invented electrical instruments, 2118; portrait, 2113  
**Canute**, emperor of the north, 3594  
 king of England, 434, 592, 2701  
**Cape Breton Island**, in Nova Scotia, 5601  
**Cape Colony**, became British, 284  
 flag, picture in colour, face 1640  
 its history, 1768  
 its observatory, 2612  
**Cape jumping hare**, 670; picture, 671  
**Cape of Good Hope**, 59, 279  
**Cape petrel**, 1627  
**Cape pigeon**, 1626  
**Capercaillie**, a kind of grouse, 1518  
**Capet, Hugh**, count of Paris, 2066  
**Cape Town**, 1768; picture, 1767  
**Capillaries**, in the blood, 1579, 1584  
 pictures, 1581, 1636  
**Capillarity**, what it is, 4824  
**Capitol**, fortress of the Romans, 554  
 held out against Gauls, 5262  
 of Washington, 1708  
 picture, 5259  
**Capitol**, the climb up the Capitol hill, story, 3554  
**Capitoline Hill**, in Rome, 5260  
**Capping verses**, game, 5113  
**Capybara**, animal, and picture, 667, 669  
**Caracalla**, Roman baths, picture, 5258
- Caracara**, hawk, 1846; picture, 1847  
**Caracas**, town, 4576; picture, 4570  
**Caractacus**, British chief, 196; picture, 197  
**Carbo-hydrates**, what they are, 1872, 2345  
 work in our bodies, 2698  
**Carbolic acid**, 1873  
**Carbolic powder**, for cleaning teeth, 2100  
**Carbon**, an element, 839, 1289  
 can be made volatile, 3093  
 found in plants, 228  
 how it is supplied to the body, 2695  
 in comets, 2499  
 in stars, 2719  
 why it is important, 285  
**Carbonate**, a salt, 1798  
**Carbonate of lime**, insoluble in water, 5250  
**Carbon compounds**, chemistry of, 1869  
**Carbonic acid gas**, can be made solid, 4050  
 how it is carried to the lungs, 1801  
 how it mixes with the air, 3090  
 its taste, 1797  
 makes food for plants, 229, 285, 2875, 3340, 4442  
 what we breathe out, 228, 1290, 1787, 1798  
**Carbon oil**, from petroleum, 4131  
**Carcassonne**, town of France, 2398  
**Card**, cards that tell any number thought of, 5660  
 games with cards: see *Games*  
 horseshoe card problem, 4667, 4778  
 how to identify, trick, 4248  
 that helps us make designs, 5450  
**Cardboard dolls**, how to make, and pictures, 341  
**Carden, Captain**, commander of the Macedonian, 2902  
**Cardin**, what the name means, 5387  
**Cardinal**, red, bird, picture, 2065  
**Carey, Henry**, poems: see *Poetry Index*  
 portrait, 3737  
 wrote *Sally in our Alley*, 3741  
**Carey, Lady E.**: see *Poetry Index*  
**Carey, Phoebe**: see *Poetry Index*  
**Carey, Wm.**, his life, and picture, 3484, 3482  
**Caribbean Sea**, 1877, 4487  
**Caribou Mountains**, part of Selkirks, 5607  
**Caribs**, people of the West Indies, 1877  
**Carleton, Sir Guy**, in Canada, 3897  
**Carlina**, plant, and picture, 1509  
**Carlotta**, empress of Mexico, 4392  
**Carlyle, Thomas**, friendship with Emerson, 1479  
 his life and work, 218  
 life of Schiller, 5222  
 on the oak, 2882  
 pictures, 211, 220, 221  
 two men I honour, 5468  
**Carmenita**, picture, 4158  
**Carmine**, colour used in painting, 3497  
**Carnac**, stone monuments, 2063  
**Carnatic**, district in the Deccan, 1546  
 nawab of, 1704  
**Carnation**, cultivation, 1203, 5269  
 description, 5269  
 how it got its name, 5115  
 its family, 1817, 4111  
 picture, 5274  
**Carnegie, Andrew**, founder of the "Hero Fund," 3106  
**Carnegie Hall**, 4584  
**Carnegie (The) Hero Fund**, and its awards, 3106  
**Carnivals**, winter in Canada, 5210  
**Carnivorous animals**, 142, 2099  
**Carnot, Lazare**, 4356; portrait, 4053  
**Caroline**, colonies of, 523  
**Caroline**, queen of George II., 2540  
**Caroline**, queen of George IV., life-story, 2681  
 pictures, 51, 2679  
 turned from Westminster, and picture, 4642  
**Carols**, what they are, 2149  
**Carp**, lives after being frozen, 2681  
**Carpaccio, Vittore**, artist, 1258  
**Carpathian Mountains**, 2860  
**Carpels**, of a flower, 4110  
**Carpentier, Edouard**, his picture, 4059  
**Carpentry**, boy carpenter's box of tools, and pictures, 337  
 making rustic articles, and pictures, 4349  
**Carpet**, how did the ladies cut the carpet? problem, and picture, 1281, 1348  
 why the sun fades carpets, 4548

# INDEX

- "**Carpet-baggers**," in the South, 2024  
**Cartara**, marble, pictures, 3022  
**Carriack bend knot**, and picture, 235  
**Carrier pigeon**, 2215  
**Carriion crow**, 1848; pictures, 1744, 1847  
**Carroll, Dr. James**, helped to conquer yellow fever, 3200  
**Carroll, Lewis**, his life, 1472; picture, 1473  
 poems: see Poetry Index  
 story of Alice in Wonderland, and pictures, 2929  
**Carrot**, 4353  
**Cartagena**, colony of the Phœnicians, 5122  
 destruction, 5264  
 its aqueducts,  
   on the Caribbean Sea, 4505  
**Carthage**, and Rome, 414, 5511  
 Regulus' return to, 5511  
 war of, 5511  
**Carthagena**, arsenal of Spain, picture, 3357  
**Carteret, Sir George**, bought New Jersey, 521  
**Cartier, Jacques**, discovers the St. Lawrence River, 3618  
 explorer, 1246, 2070  
 first voyage, 3617  
 portrait, 261  
 takes colonists to Quebec, 3618  
**Cartilage**, is gristle, 2439  
**Cartoons**, made by Raphael, 757  
**Cartouche**, what it is, 4785  
**Cartwright, Edmund**, his invention, 3996  
**Cary, Alice and Phoebe**, lives, 2044  
 pictures, 2043  
**Cary, Miss Jennie**, first sang "Maryland," 2957  
**Casabianca, Giacomo**, his death, 3472  
**Cascade Range**, different from Coast Range, 5607  
**Cashmere**, king who came to, story, 2745  
**Cashmere goat**, 380  
**Casia, Empress**, 3153  
**Caspian Sea**, loss of water, 3072  
 railways from Moscow, 3750  
 the largest inland sea, 3623  
 thoroughfare for Russia, 3630  
**Cassiopeia**, legend of, 3313  
**Cassites**, their wars, 4974, 4978  
**Cassowary**, and picture, 1423, 1429  
**Caste**, among the Hindoos, 1550, 1699  
**Castriot, George**: see Scanderbeg  
**Cat**, a flesh-eating animal, 2207  
 and parrot, story and picture, 2494, 4911  
 belling the cat, fable, and picture, 463  
 cat and mice, fable, and picture, 4274  
 cat, eagle, sow, fable, with picture, 4805  
 communication of ideas, 5325  
 does not cry, 5383  
 drawing of a cat made from squares, 1073  
 fondness for valerian, 4970  
 how it purrs, 1130  
 how its hair stands on end, 1962  
 how long it lives, 2328  
 how necessary cats are, 45  
 how to draw with two coins, 3514  
 legend of, 5524  
 not responsible for Dick Whittington's fortune, 5524  
 of the same family as the lion, 132  
 stuffed cat, with picture, 575  
 the different kinds, 502  
 the king of the cats, legend, 2744  
 the word in many languages, 5233  
 to let the cat out of the bag, 5533  
 various cats, pictures, 505  
 why cats fall on their feet, 1573  
 why it can see in the dark, 153  
 will stay in empty house, 5411  
**Cassatt, Mary**, a painter, 4152  
**Castle**, on the cliff, 5597  
**Castro, Mark**, rescued passengers of the Cherokee, 3106  
**Catacombs**, how men hid in them, 4700  
**Catalonia**, province of Spain, 3353  
**Catalpa**, description, 5446  
 picture, 5444  
**Cataract**, of eye, how it is treated, 4298  
**Catch-ball**, game, 1614  
**Catchfly**, its family, 4111  
**Catch the salmon**, garden game, 1072  
**Caterpillar**, how it protects itself, 3416  
 its life-story, 2983  
 pictures, face 2982 in colour, 2984, 2985, 2987, 2991  
**Caterpillar**, why it turns into a butterfly, 4235  
**Catesby, Robert**, and Gunpowder Plot, 1791  
**Catgut**, comes from sheep, 390  
**Catharine**, of Braganza, 1548, 3358  
**Cathcart, Earl**, as governor, 4100  
**Catherine**, of Aragon, queen of Henry VIII., Henry's treatment of her, 2534  
 her portrait, 844  
 home of her childhood, 3358  
 legality of her marriage, 2708  
 married Arthur, Prince of Wales, 842  
**Catherine**, queen of Henry V., 2706  
**Catherine I.**, empress of Russia, 3630  
**Catherine II.**, the Great, empress of Russia, 3630, 3748  
**Catherine Parr**, queen, 846  
**Catherine, St.**, girl who defied an emperor, story, 1010  
 picture, 1011  
**Catherine wheel**, 1010  
**Cato, Marcus Porcius**, called the censor, 416  
 opposed Roman luxury, 5265  
**Catspaw hitch**, and picture, 3283  
**Catstall**, grass, and picture, 2981  
**Cattaro**, harbour, 2860, 3224; pictures, 2857  
**Cattle**, different kinds, 375  
 education of young, 5481  
 pictures, 377, 385, 4571  
 yards in Chicago, picture, 2659  
**Caucasus Mountains**, in Russia, 3631, 3750  
**Cauld Lad of Wilton Hall, The**, legend, 3648  
**Cauliflowers**, when to sow, 2971  
**Causation**, is universal, 5248  
**Caustic potash**, how it is formed, 1799  
**Caustic soda**, is an alkali, 1799  
**Cavaliers**, followers of Charles I., 1888  
**Cave**, how to make, with pictures, 5001  
 Mammoth Cave, 583  
**Cave bear**, lived in England, 49, 192  
**Cave-dwellers**, African, 5569  
 description, 5437  
 picture, 5444  
**Cave men**, 192, 618  
**Cavendish, Henry**, life and portrait, 2118  
**Cave of Dogs**, in Italy, 1787  
**Cavern of Ice**, in Hungary, 2860  
**Caviare**, what it is, 201  
**Cavour, Count**, worked to free Italy, 3024  
**Cawnpore**, in the Indian mutiny, 1706  
**Caxton, William**, his life, 3570  
 printed The Canterbury Tales, 3328  
 printed the story of King Arthur, 867  
 started printing, 756  
**Cecil, Robert**, Earl of Salisbury: see Salisbury  
**Cecil, Wm.**, Lord Burleigh: see Burleigh  
**Cecilia, St.**, her life, and picture, 1014  
**Cedar**, age of cedars of Lebanon, 62  
 pictures, 3658  
**Cedar-birds**, wings of, 5437  
**Celeriac**, kind of celery, 3176  
**Celery**, how to grow, 3176, 3726, 4353  
**Celestine V.**, pope who ran away, story, 459  
**Cell**, in living creatures, 1003  
 under the microscope, 1102  
 what a cell is, 782  
**Cellar beetle**, 3261  
**Cellini, Benvenuto**, his life, 1223, 4954  
 pictures, 4945, 4947  
 sculptor, 4161  
**Celluloid**, why it catches fire easily, 4823  
**Cellulose**, what it is, 1004, 4823  
**Celts**: see Kelts  
**Cenis, Mont**, its tunnel, 2392  
**Census**, strange things it shows us, 2665.  
 what it shows of the growth of our country, 2420  
**Centaur**, common, 4424  
 picture, 4419  
**Centigrade**, scale of temperature, 3671  
**Centimetre**, a measure, 3671  
**Centipede**, its life story, 3295; picture, 3297  
**Central America**, 4381, 4386  
   See also Names of Countries  
**Central Asia**, deserts, 108, 3072  
 history and geography, 3931  
 map, 3933  
 people, 3931, 3933  
**Centre of gravity**, how to find it, 3835  
 of a boat, picture, 3835  
 of a flat object, picture, 3839  
 value in balancing, 5569

# INDEX

- Centrifugal force**, 2230, 3674, 3813  
**Century**, what it means, 192  
**Cepheus**, king of Ethiopia, 3314  
**Cerberus**, dog of hell, 3314, 5164  
**Cereals**, grass plants, 2078, 2923  
**Cerebellum**, what it is, and its duties, 3565  
     **See also Brain**  
**Ceres**, mother of Proserpine, 5316  
**Ceres**, minor planet, 2427  
**Cerro de Pasco**, town, and picture, 4575  
**Cervantes Suavedra, Miguel de**, his book *Don Quixote*, 899, 3358  
     life and writings, 5220; portrait, 5217  
**Cervera, Admiral**, at Santiago, 2188  
**Ceteosaurus**, a lizard, 48  
**Cetewayo**, Zulu king, 1770  
**Cette**, town in south of France, 2399  
**Cettinje**, in Montenegro, 3224; picture, 3218  
**Centa**, belongs to Spain, 4262  
     how Christians kept it, 3168  
**Cevennes**, mountains in France, 2392  
**Ceylon**, British dominion, 1880  
**Chad, Lake**, varies in size, 4262  
**Chadde, St.**, 1321  
**Chæroneæ**, battle of, 5130  
**Chaffinch**, pictures, 1744, 2051, 2059  
     taught to sing, 2057  
**Cha-f-ka, King**, 4785; portrait, 4789  
**Chain**, becomes stiff with movement, 3466  
**Chain knot**, how to make, and picture, 236  
**Chain stitch**, how to do, and picture, 1348  
**Chain viper**, kills human beings, 1380  
**Chair**, rustic chair, picture, 4349  
     that comes to you, trick, 2485  
**Chalcid fly**, its uses, 3258  
**Chaldeæ**, part of Mesopotamia, 4974  
**Chaldeans**, studied astronomy, 1655  
**Chalk**, calcium carbonate, 1669, 1798  
     forms part of the earth's crust, 2887  
     insoluble in water, 5250  
     is turned into soil, 3339  
     picture, 2619  
     use in drawing: *see* Drawing  
     where it comes from, 2335, 2619  
**Chalmers, James**, life, 3490; portrait, 3483  
**Chamber of Deputies**, 2399  
**Chameleon**, life-story, 1221; picture, 1227  
     why it changes colour, 2458  
**Chamfering**, how to chamfer wood, 4561  
**Chamois**, 382; picture, 381  
**Chamomile**, 4417; picture, 4416  
**Chamounix glacier**, picture, 2515  
**ChAMPLAIN, Samuel**, explores Canada, 264, 3620  
     founded Quebec, 3620  
     portrait, 261  
     voyage up the St. Lawrence River, 3619  
**ChAMPLAIN, Lake**, discovery of, 262  
**Chancel, Monsieur**, invented match, 775  
**Chancellor, R.**, navigator, 845, 3626, 4722  
**Chandernagore**, factory set up, 1702  
**Chantrey, Sir Francis**, sculptor, 4162  
**Chapel**, with mosaic, picture, 1991  
**Chapin, Deacon**, the "Puritan" statue, 4948  
**Chapman, George**, poet, 3330  
**Chapultepec**, battle of, 1832  
     Chapultepec Palace, picture, 4391  
     hill in Mexico, 4382  
     taken by the United States, 4390  
**Character puzzles**, 4350, 4458  
**Charades**, 2253, 4351, 4458  
**Charcoal**, keeps soil sweet, 1816  
     made from hazel wood, 1965  
     not a food, 2695  
     use in iron and steel industries, 5538  
     used to filter water, 2109  
**Charing Cross**, London, its name, 2533  
**Chariot**, from reels, and picture, 4352  
**Charlemagne**, and his pupils, picture, 2067  
     conquered the Netherlands, 3458  
     emperor of the Holy Roman Empire, 3014  
     fought against the Moors, 3354  
     helped the Church, 3524  
     his reign, 2064  
     in Switzerland, 2964  
**Charles**, king of Roumania, 3220  
**Charles I.**, king of England, farewell to his children, 5360  
     his life, 1887  
     his reign, 1022  
     statue, 5013  
     **Pictures of Charles I.**  
         his children, 1886  
         leaving Westminster Hall, 1031  
         portrait, 1891, 1896  
         raising the standard at Nottingham, 1031  
         with his household on the river, 1886  
**Charles II.**, king of England, defeated at Worcester, 1025  
     his marriage, 1702, 3358  
     pictures, 1026, 4619  
**Charles III.**, king of France, 2065  
**Charles IX.**, king of France, his reign, 2070  
**Charles V.**, emperor of Germany, and Titian, picture, 1259  
     his dominions, 2527, 3356  
     his ideas of empire, 5498  
     his rule in the Netherlands, 3460  
     his struggles against pirates, 4260  
     war in Italy, 3020  
**Charles IX.**, king of Sweden, 3600  
**Charles XI.**, king of Sweden, 3596  
**Charles XII.**, king of Sweden, 3596, 3600  
**Charles XIV.**, king of Sweden, 3596, 3598  
**Charles the Bold**, duke of Burgundy, 2966, 3460  
**Charles the Great**: *see* Charlemagne  
**Charles, Thomas**, as minister at Bala, 2549  
**Charles Edward Stuart**: *see* Stuart  
**Charles Martel**, drove back the Saracens, 2064  
**Charles O'Malley**, story of the novel, with picture, 2903  
**Charles's Wain**: *see* Great Bear  
**Charleston**, founded, 523  
     naval attack, 986  
     palmetto fort at, 5440  
     resists capture, 2018, 2019  
**Charlottetown**, capital Prince Edward Island, 5604  
**Charpas**, what it is, 3713  
**Charybdis**, terrible whirlpool, 70, 4743  
**Chase, William M.**, art of, 4152  
     picture by, 4158  
**Chatham, Earl of**, 2384, 2710  
     portrait, 2379  
**Chats**, birds, pictures, 2053  
**Chatterers**, family of birds, 1747  
**Chatterton, Thomas**, life and poetry of, with pictures, 5317  
**Chaucer, Geoffrey**, father of English poetry, 752  
     his life, 3327; picture, 3326  
     poet, 94, 469  
     wrote *The Canterbury Tales*, 437  
**Cheddar**, cave, picture, 406  
**Cheese**, how microbes aid in making, 904  
     how mites get into cheese, 3304  
     its value as food, 2793  
**Cheese-box**, making table from, 4667  
**Cheetah**, fierce animal, 1846  
     picture, 136  
     what it is, 140  
     what kind of animal it is, 140  
**Chellifer**, scorpion, picture, 3301  
**Chemical compounds**, 1797  
**Chemical energy**, what it is, 3552  
**Chemicals**, and the soil, 3343  
     why they have Latin names, 4235  
**Chemise**, how to make a doll's chemise, and pictures, 577  
**Chemistry**, cannot build up life, 4120  
     chemistry of the stars, 2718  
     difference between mixture and compound, 1040, 1665  
     low temperature chemistry, 4051  
     meaning of word, 1665  
     what it is, 839, 1869  
**Chemulpho**, chief port of Korea, 368  
**Chemps**: *see* Chufu  
**Chepman, Walter**, printer, 3572  
**Chepstow**, derivation of name, 5387  
**Cherbourg**, port of France, 2399, 2590  
**Cherokee**, the, passengers rescued, 3106  
**Cherokees**, an Indian tribe, 17  
**Cherry, Andrew**, wrote Bay of Biscay, 3740  
**Cherry**, black, poisonous, 4490  
     how it is formed, 2075, 4344  
     how its fruit is made up, 4110  
     how the word was made, 4532  
     pictures, 651, 3443, 4491  
     wild red, 4490  
**Cherry gall**, the home of an insect, 2460  
     picture, flowers, 4491  
**Chesapeake**, the, frigate, and Shannon, 1399, 2902

# INDEX

- Cheshire**, derivation of name, 5387  
**Chest**, of the human body, 1580  
**Chestnut**, American, 5628  
 how it grows and its uses, 1966  
 pictures, 1970, 3652, 3653, 5625  
**Chest of drawers**, how to make from a match-box, 103  
**Chewing**, how necessary it is, 2206  
**Chibchas**, South American tribe, 4504  
**Chicago**, description of, with pictures, 5513  
 fire, of 1871, 5513  
 picture, 5517  
 stockyards, in picture, 2659  
 World's Fair, 2418, 3538, 5513  
**Chickamauga**, battle of, 2018  
**Chickweed**, 3828  
**Chicory**, picture, 4187  
**Chilblains**, their cause, 2075  
**Child Charity**, story, with picture, 1043, 1044  
**Childeric**, captured Paris, 2318  
**Children**, bequests of Charles Lounsbury, 5203  
 boy (the) scouts of America, 3583  
 boy (the) who died for the Republic, 5512  
 child gazing at sunlight, picture, 3635  
 Chinese, 5583  
 clever deeds of, 5544  
 Colonial, 941  
 daughter (the) of King Charles, 5359  
 first white child born in America, 257  
 how the children saved the town, story, 964  
 Kaffir children, stories told to, 5349  
 little girls of long ago, 2711  
 little princes in the Tower, 1980  
 Mrs. Hemans, the children's poet, 5468  
 partners, a story, 4859  
 playing with globe, picture, 5281  
 their education, 5284  
 their food, 2700  
 what New York City does for its children, with pictures, 3193  
 why some things harm children, 4827  
 why they are easily hurt, 4827  
 why they require salts, 2698  
 work of libraries for, 3199  
**Child Molland**, story, and picture, 5081  
**Chile**, added to Spain's dominions, 3356  
 flag, picture in colour, face 1640  
 its peace with Argentina, 4569  
 its position, 4500, 4569  
 was freed, 4506  
**Chilian sea-eagle**, picture, 1839  
**Chillon Castle**, 3125; picture, 2958  
**Chilodactyle**, picture in colour, face 200  
**Chimera**, a fish, 2446; picture, 2447  
**Chimes**, *The*, the story of the book, and pictures, 2285  
**Chimney**, helps to keep a room fresh, 1788  
**Chimpanzee**, 802, 3076; picture, 603  
**China and Chinese**, advanced on Central Asia, 3934  
 astronomy is studied, 1655  
 hatred of new ideas, 108  
 history, 108  
 how to reach China, 114  
 in Hawaii, 2182  
 life thought and religion of Confucius, 5579  
 no milk used in China, 376  
 people, 106, 116, 3974  
 physical features, 106  
 possessions, 1879, 3932  
 settled in Japan, 364  
 stories from, 5344  
 the Great Wall, 108  
 the opening up of China, 112  
 towns and industries, 114  
 war with Japan, 368  
**Pictures of China**  
 boys' choir, 109  
 dinner-party, 111  
 Empress Tze-hsi, in colour, face 105  
 festival of the Dragon-boat, 111  
 flag, in colour, face 1640  
 girls doing embroidery, 109  
 Great Wall, 106  
 maps, 107, 365  
 road leading to emperors' tombs, 115  
 tea-house in Shanghai, 111  
 temple, 105  
 woman with tiny feet, 109  
**China**, how it is made, and pictures, 4477, 4479  
 how to mend it, 4249  
**China**, porcelain, where made, 2396  
**China aster**, picture, 5290  
**China tea**, 3316  
**Chinchilla**, 670, 2730; pictures, 671  
**Chinese lanterns**, winter cherry, 1203  
**Chinese pink**, 5270  
**Chinook winds**, in Canada, 5365, 5370  
**Chios**, Island of, 3313  
**Chipmunk**, why the chipmunk has black stripes, 1068  
**Chippewa**, battle of, 1399, 3901  
**Chiron**, centaur, 185  
**Chisel**, when to use it, and picture, 337  
**Chloride of mercury**, how to make, 1668  
**Chlorine**, a gas, 223, 1290, 1667  
 in hydrochloric acid, 1797  
**Chloris**, spirit of the flowers, 190  
**Chloroform**, how it acts, 1005, 3236  
 how its use was discovered, 4201  
 made from marsh-gas, 1870  
**Chlorophyll**, in plants, 2875, 4118  
**Chocolate**, how it is made, and pictures, 2237  
 how to make chocolate creams, 3512  
 value as food, 3317  
**Chokeberry**, description of, 5036  
 picture, 5034  
**Choking**, its cause and remedy, 1635  
**Chopin, Frederick**, a story about him, 3427  
 story of his life, 3250; portrait, 3243  
**Choregos**, who they were, 5004  
**Chosroes II.**, Persian king, 3876, 3878  
**Christ Church**, Newgate Street, London, picture of spire, 1163  
**Christchurch**, New Zealand, 1460, 1464  
**Christian IV.**, king of Denmark, 2528, 3596  
 statue in Copenhagen, 3598  
 tomb at Roskilde, 3600  
**Christiania**, capital of Norway, 3596, 3602  
 picture, 3596  
**Christiania Fiord**, in Norway, 3602  
**Christianity**, adopted by Denmark, 3594  
 American natives taught, 4384  
 brought to England by St. Augustine, and picture, 529, 430  
 description, 5270  
 disputes among Christians, 3156  
 Finland converted, 3630  
 flourished in Ireland, 432  
 Goths became Christians, 3354  
 honoured by Constantine, 534  
 how the Eastern and Western Churches arose, 3150  
 in Britain, 199, 2329  
 introduced into England, 5524  
 its spread, 2522, 3874  
 persecution by Roman emperors, 530, 531, 534, 4946  
 preached in Japan, 366  
**Christiansand**, port of Norway, 3596  
**Christmas**, a tale of Christmas Eve, and picture, 2142  
 Christmas charade, 2253  
 Christmas gymkhana, 2252  
 poetry, and pictures in colour, 2148  
 true story of Father Christmas, 2146  
**Christmas cards**, how to use, 2871  
**Christmas Carol**, story by Dickens, and pictures in colour, 2158  
**Christmas hymn**, 4920  
**Christmas presents**, how to choose, 4882  
**Christmas rose**, 5270  
 picture, 4287  
**Christmas-tree**, for birds, and picture, 2251  
**Christopher, St.**, 1008; picture, 1009  
**Chromid**, a fish, 2684  
**Chrysanthemum**, a story of it, 1677  
 how to make of paper, 4140  
 meaning of the name, 5115  
 pictures, 1817, 3730, in colour  
**Chub**, a fish, 2681; picture, 2679  
**Chu-fu**, king of Egypt, 4785, 5004  
**Chulchurst, Elizabeth and Mary**, legend, 4277  
**Church, F. M.**, an artist, 4149  
 picture by, 4155  
**Churubusco**, battle of, 1832  
**Cibber, Colley**: see Poetry Index  
**Cicada**, locust, 3140; picture, 3078  
**Cicero**, orator, 421, 5265; pictures, 419  
**Cid, The**, fought against the Moors, 3354  
**Cider**, made from apples, 641  
**Cilia**, what they are, 1637

# INDEX

**Cimabue, Giovanni**, his life, 2780  
 portrait, 2779  
 taught Giotto, 4586  
**Cimbri**, defeated by Romans, 5265  
**Cinnamatus**, his story, 5261  
**Cinderella**, story, and pictures, 818  
 written by Straparola, 1468  
**Cinematograph**, what it is, 510  
**Cineraria seed**, how to sow, 3514  
**Cingaleses**: see Singhalese  
**Cinnabar**, in Canada, 5600  
**Cinquefoil**, its family, 4110  
 marsh, 5038; with picture, 5035  
**Cipher**, secret writing, 4137  
**Circe**, a witch, 70  
**Circle**, degrees of a circle, 446  
 making circles and filling them in, with pictures, 3428  
**Cirrus Maximus**, at Rome, 5261  
**Citric acid**, found in fruits, 1799, 4749  
**"City of Magnificent Distances"**, nickname of Washington, D. C., 1711  
**Civet**, valued for its scent, 140; picture, 137  
**Civil Service**, started, 3537  
**Civil War**, in America, amendments to Constitution, 1598  
 brother's (the) war, 2007  
 causes leading towards, 2007  
 conditions producing, 1828  
 conduct of, 2007  
 emblems of S. Carolina, 5440  
 North and South at the beginning of the, 2012  
 note on, 3536  
 See also **Confederate States; Slavery; United States**  
**Civil War**, in England, 1024, 1887, 1888  
**Clamp**, a store for vegetables, 4353  
**Clapperton, Hugh**, 282; portrait, 283  
**Clare, John**: see Poetry Index  
**Claremont**, the real fairy of Claremont, story, and picture, 2733  
**Clarendon, Earl of**, 523  
 portrait, 519  
**Clarendon, Edward Hyde, Lord**: see Hyde  
**Clark, William**, member of Lewis' and Clark's expedition, 1396  
**Clarke, James Freeman**, incited the Battle Hymn of the Republic, 2966  
**Claudius**, emperor of Rome, became insane, 529; picture, 529  
**Clavichord**, musical instrument, 3292  
**Clay, Henry**, compromise concerning California, 3536  
 helped to prevent war, 3535  
 introduces compromise of 1850, 2008  
**Clay**, how it is made, 407  
 how it is made into bricks, pictures, 3038  
 of Canada, 5600  
 part of earth's crust, 2887  
**Clay cylinder**, Assyrian, picture, 3399  
**Clayton, Dr.**, coal-gas experiments, 655  
**Clayton, M. Y.**, position of, 5425  
**Cleaning**, best way to clean things, 4456  
 hot water as cleaner, 4230  
**Cleanliness**, why it is necessary, 3146  
**Cleat**, what it is, 1346, 1510  
**Clematis**, different kinds, 5270  
 pictures, 5269, 5276  
**Clemens, S.**: see Twain, Mark  
**Clement of Rome**, 2330  
**Clement VII, Pope**, picture, 4947  
**Cleobis and Biton**, story of, 1301, 2301  
**Cleopatra**, and Antony, 421  
 defeated by Romans, 5003  
 the last of the Ptolemies, 4792  
**Cleopatra's Needle**, its history, 5008, 5098  
 not erected by Cleopatra, 5524  
 pictures, 5009, 5099  
 set up by Thothmes III., 4786  
**Clerk**, brave clerk at Delhi, 1913  
 Clerk's tale, in *The Canterbury Tales*, 437  
 what a clerk did for the world, story, 4646  
**Clermont**, the, steamboat, 2687  
**Cleveland, Frances Folsom**, in White House, 332  
 portrait, 337  
**Cleveland, Grover**, administration, 3537, 3538  
 as president, 2417, 2418  
 picture, 3532  
 protests against Weyler's conduct, 2184  
**Cleverness**, and size of brain, 4597

**Cliffden blue butterfly**, picture in colour, face 2982  
**Cliff-dwellers**, of the Southwest, 3683  
**Clifton Bridge**, 20; picture, 27  
**Climate**, the two classes, 1860, 4323  
**Climbing perch**, with picture, 2682, 2683  
**Clinton, De Witt**, and Erie Canal, 1826  
 portrait, 1395  
**Clinton, Sir Henry**, attacks Charleston, 986  
 dealings with Arnold and André, 3812  
 portrait, 981  
 unaware of Washington's march, 992  
**Clisthenes**, his daughter's suitors, 2301  
**Clive, Robert**, in India, 1094, 1704  
**Clock**, cuckoo clocks, 2754  
 Galileo's clock, 3549  
 how it works, pictures, 1537  
 how to make case, and picture, 4775  
 how to tell the time, and picture, 1542  
 the story of the clock, 1535  
**Clodion, Claude Michel**, sculptor, 4162  
**Clogs**, where the pattern came from, 2399  
**Cloister and the Hearth, The**, story of the book and pictures, 4107  
**Clondalkin**, round tower of, 5462; with picture, 5467  
**Clot-bar**, picture, 5188  
**Cloth**, production of in U. S., 2662  
**Clothes-basket**, a game, 2252  
**Clothes-moth**, its life-story, 2992  
**Clothes-pegs**, fighting clothes-pegs, how to make, and picture, 934  
**Clothing**, how to make old clothes new, 3515  
 its warmth, 682, 3383, 4340  
 why it should be loose, 2074  
**Clouds**, different forms of, and pictures, 3692  
 do not make thunder, 1675  
 how they stop sunlight, 3385  
 made of water, 406, 917  
 part of the earth, 4547  
 shadows on hills, 1862  
 their making and unmaking, 5022  
 what it is like above the clouds, 3691  
 when the sky is clear, 4826  
 why they fall as rain, 4339  
 why they have silver linings, 1774  
**Clough, Hugh**: see Poetry Index  
**Glove hitch**, and picture, 3283  
**Glove-pink**, the carnation, 5270  
 the family, 4111  
**Glover**, old-field, 4288  
**Glovins**, founded France, 2064  
 pictures, 2065  
 was Childeric's son, 2318  
**Clumps**, a game, 2137  
**Coaches**, coach in the floods, picture, 193  
**Coaita**, a monkey, 606; picture, 605  
**Coal**, contains stored sunlight, 1267  
 ferns turned into coal, 170  
 forests that have become coal, picture in colour, face 799  
 how coal is procured, pictures, 801  
 how gases get into it, 2506  
 how it was found, 4440  
 how the forests were buried, 2798  
 in Canada, 5600, 5601  
 in West Turkestan, 3932  
 its history, 799  
 its price, 4746  
 made by carbon, 1289  
 microscopic view of section, picture, 799  
 mines of, 10  
 production of in U. S., 2660  
 to carry coals to Newcastle, 5533  
 to haul over the coals, 5534  
 trees turned into coal, 49, 3073, 3542  
 why it burns, 915, 2506  
 why it is good for fuel, 3757  
 used in engine, 1828  
 used in iron and steel industries, 5538  
**Coal-mine**, cause of explosions, 4319  
 how it is reached, 800  
 pictures, 800, 801  
**Coal-tar**, its uses, 2507  
 products manufactured from, 2664  
**Coamings**, of a ship, 4565  
**Coastguard's work**, pictures, 4430  
**Coasting**, in Canada, 5209  
**Coast Range**, in Canada, 5607  
**Coat**, why it has back buttons, 5660  
**Cobalt**, a colour, 3497



# INDEX

- Cobalt**, town, in Canada, 5600  
silver discovered in, 5599
- Cobbler**, and elves, story, and picture, 712  
cobblers and the cuckoo, tale, and pictures in colour, 2297  
merry cobbler and his coat, tale, and pictures in colour, 2372
- Cobbler-fish**, picture in colour, face 200
- Cobden, Richard**, and Bright, picture, 3705  
work as a reformer, 3703
- Coblentz**, bridge, picture, 30  
picture, 2749  
town, 2754
- Cobra**, how it kills, 1374  
pictures, 51, 1377  
various kinds, 1376
- Cobweb**, between twigs, picture, 734
- Cochins**, breed of fowls, 1513
- Cochrane, Sir John**, how his daughter saved him, 2803
- Cock**, picture, 1515
- Cockatoo**, a parrot, 1747; picture, face 48
- Cockchafer**, grubs, picture, 3261  
picture in colour, face 3140
- Cock-fighting**, 1514
- Cock-of-the-rock**, 1748; picture, 1736
- Cockroach**, 3141; picture, 3147
- Cocoa**, beans, pictures, 2237, 2239, 2240, 3315  
cocoa-bean plantation, picture, 2238  
its manufacture, 2237  
its value as food, 3113  
why it is good for children, 3317
- Cocoanut**, fibre for growing bulbs, 1816  
how its seed is carried, 3828  
how rope is made from it, pictures, 3993  
its growth and uses, 1966  
pictures, 1968, 2197  
the fluid inside, 1989
- Cocoanut balls**, how to make, 3512
- Cocoanut ice**, how to make, 3518
- Codfish**, its eggs, 201  
salting, etc., picture, 4099  
where caught, 202; picture, 203
- Cod-liver oil**, 202, 3601
- Coffee**, berries not properly named, 5524  
best way to make, 3317  
coffee plant, picture, 3315  
effect on the body, 3317  
not a food, 3113
- Coffer-fish**, 210; picture, 209
- Coffin-ships**, 1574
- Cohesion**, 617, 684, 2880
- Cohosh**, black, description, 5032  
explanation of force, 5687  
picture, 5030
- Coins**, how money is made, pictures, 536  
tricks with coins, and pictures, 98, 2355, 4034  
use of copper in coins, 1870  
why any coins are made of gold, 4342  
why their edges are milled, 3034
- Coke**, use in iron and steel industries, 5538
- Colchester**, a Roman city, 198
- Cold**, coldest place in the world, 3752  
coldest possible point, 4049  
contracts things, 1372  
hot things and cold things, 4047  
in the moon, 2226  
is absence of heat, 1774  
sense of cold, 1964  
stops the action of ferments, 4052  
why it is colder on a mountain-top, 776  
why our teeth chatter, 4439  
why some things are colder than others, 682  
why we shiver, 2232
- Cold Harbour**, battle of, 2019
- Colds**, loss of sense of smell, 3240  
where they come from and go to, 2508  
why we catch cold, 1963  
why we get hoarse, 2455
- Cold water**, three cups of, stories, 467
- Cole, George Vicat**, his picture, 2076
- Cole, Thomas**, life and art, 4149
- Coleridge, Samuel Taylor**, his life, 3908  
his mistake about the moon, 4116  
poems: see Poetry Index  
portrait, 3907  
story of, 3706
- Coleridge, Sara**: see Poetry Index
- Collet, John**, friend of Erasmus, 3156
- Cole-tit**, picture, 2217
- Colic**, what it is, 2346
- Coliseum**, last fight at, and picture, 626, 627  
what it was, and picture, 5268, 5267
- Collar**, how to make a braid lace, with pictures, 5352
- Collar-bone**, in man, 2544
- Colleges**, Harvard, 518
- Colleon Monument**, and its makers, 4161  
how it was built, and picture, 1254, 4165
- Collie**, shepherd's dog, 502  
story of Scottish collie, and picture, 4003
- Collier, Hon. John**, his picture, 1248
- Colliery head**, picture, 799
- Cologne**, its cathedral, 2752; picture, 2749
- Colombia**, flag, picture in colour, 1640  
foundation, 4506  
in South America, 4500, 4574  
products, 4574
- Colombo**, harbour of Ceylon, 1880
- Colon**, city on Isthmus of Panama, 4576  
may be cleaned by the U. S., 2190
- Colonies**, character of colonists, 2007  
children in, 941  
Continental Congress of 1774, 982  
difference in the character of the colonists, 879  
European in the United States, and their use to the mother countries, 977  
European legislation concerning, and taxation of, 978  
first permanent English colony in America, 514  
France in Canada, 3617  
little girls of long ago, 2711  
Russian in North America, 2178  
second Continental Congress, 984  
Spain in West Indies, 2184  
wives for settlers sent over, 514
- See also America, Canada, Explorations, Mexico, United States, Wars**
- Colonna, Vittoria**, picture, 4947
- Colorado**, admitted, 3537
- Colorado beetle**, with picture, 3139
- Colorado Cañon**, picture in colour, face 836
- Colossus of Rhodes**, statue, picture, 908
- Colt, Samuel**, as inventor, 2667
- Colt's foot**, description, 4614  
picture, 4608
- Colour**, caused by waves of light, 156  
colour at night, 3977  
colours in painting: see Painting  
colours we cannot see, 3758  
difference in gaslight and daylight, 4339  
how colours vary, 4508  
how light is broken up into colours, picture in colour, face 2718  
how reflection produces colour, 5177  
light and colour, 5173  
seeing colours, 4507  
the pitch of light, 5174  
why seen when eyes are shut, 3035
- Colour blindness**, what it is, 156, 4509
- Columba, St.**, a missionary, 430  
his life, 4708; picture, 4708
- Columbia**, burned, 2020
- Columbia**, Canadian province, 1248
- Columbia River**, discovery of, 1396
- Columbia University**, picture of, 5183
- Columbine**, 3736, 5270  
description of flower, 4839  
garden varieties, 5270  
picture, 4832
- Columbus, Christopher**, and Marco Polo's book, 55  
discovery at mouth of Orinoco, 4502  
found Haytiens playing with rubber balls, 5677  
helped by Isabella of Castile, 2367  
his life, 56, 3016  
his map, 366  
mistook West Indies for India, 1877  
monument in Barcelona, 3361  
pictures, 56, 57, 68  
sees America, with pictures, 5506  
statue of, 4848  
voyages of, 258  
what he said of Cuba, 4381  
what he said of the Bahamas, 1876
- Columbus, the**, war-ship, 2898
- Combustion**, what it is, 1195
- Comedy of Errors**, story of the play, 630

# INDEX

- Comet**, day of the, a story, 5509  
gets in the way of planets, 3095  
how it travels, 150, 152, 1948  
important comets, pictures, 2499  
Jupiter's influence on comets, 2428, 3095  
path round the sun, pictures, 152, 2497  
what comets are, 2495  
why the tail changes position, 2088
- Comet**, steamboat, 2472; picture, 2469
- Comfrey**, plant, its family, 4112, 4970
- Cominius**, Pontius, his brave deed, 3554
- Comma butterfly**, picture, 3411
- Commerce and Labour**, U. S. Department of, 1597
- Commodus**, emperor of Rome, 533
- Common butterwort**, with picture, 5030
- Commons**, House of: see Parliament
- Commonwealth**, in England, 1025
- Commune**, in France, 2277
- Como, Lake**, in Italy, 3012
- Companion**, its real meaning, 229
- Companion**, of a ship, 4565
- Company of the Hundred Partners**, given monopoly of fur-trade in Canada, 3620
- Compass**, compasses, pictures, 40, 333  
how to read, with picture, 5292  
how to use watch as, and picture, 4777  
why it bears a fleur-de-lys, 5650  
why it points north, 4438
- Complexion**, fair and dark people, 136, 1987
- Composers**, great composers, 3243
- Composite family**, in plants, 4112
- Composition**, in chemistry, 1194, 1665
- Compounds**, the making of, 1665
- See also Chemistry**
- Compromise of 1850**, in relation to admission of California and slavery, 2008
- Comte, Auguste**, his teaching, 5249
- Comyn, The Red**, slain by Bruce, 3084
- Conception**, what it is, 5025
- Concord**, battle of, 983  
town in the United States, 1471
- Concorde, Place de la**, description, 5335
- Conde, Prince of**, 1664, 3472
- Condiments**, effect on the body, 3315
- Condor**, bird, 1843; picture, 1841
- Coney**, is the hyrax, 995
- Confederate States of America**, money of, 2019  
organise a government, 2010  
reconstruction of, 2022, 2023
- See also Civil War; United States**
- Confucianism**, what it means, with pictures, 5581
- Confucius**, his life and teaching, 2998, 3000, 4108, 5580  
pictures, 2995, 5582  
thoughts, life, sayings, etc., 5579
- Conger eel**, 2451, 2681; picture, 2449
- Conglomerate**, stone, with picture, 5197
- Congo forest**, in Africa, 3073, 3076
- Congo River**, 284, 3073, 4254
- Congo State**, belongs to Belgium, 4262  
children, picture, 4259  
flag, picture in colour, face 1640
- Congress**, Continental, appoints Marine or Naval Commission, 2397  
meets, 982  
the second Continental, 984
- Congress, The United States**, its powers, 1594
- Conjuring**, Afghan bands, 836  
ball that answers questions, 581  
boy conjurer's joke with audience, 936  
coin and handkerchief, 4034  
conjuring with matches, 3612  
how the conjurer makes his money, and pictures, 1508  
how to identify selected card, 4248  
imp with disappearing head, 3388  
magic tumbler, 2132  
magician's jacket, 1615  
mysterious Chinese bat, 1618  
mysterious disappearing penny, 4778  
pillars of Solomon, 2870  
self-suspending wand, 3174  
suspended penny, 4666  
tricks with English pennies, 4453  
wandering halfpenny, 1926  
wizard of Wabasha, 4769  
wizard's wand and magic purse, 3068
- See also Tricks**
- Connaught**, governor-general, 4106
- Connaught**, story, 855
- Connecticut**, colony of, its history, 524
- Connor Ralph**: see Gordon, Chas. W.
- Conquer**, garden game, 1072
- Conrad**, emperor of Germany, 1589
- Conrad**, of Montferrat, defied Saladin, 1589
- Consequences**, game, 2137
- Conservation**, of natural resources, 3538
- Consonant**, 2227, 4077, 4078
- Constable, John**, his picture, Salisbury Cathedral, 4593  
painted landscapes, 4587
- Constable**, the brave constable of France, story, 2806
- Constance, Lake**, 2960
- Constantine the Great**, as emperor, 5321  
founded Eastern Empire, 5288  
leading his troops, picture, 526  
Roman emperor, supported Christianity, 534  
took the bronze horses from Rome, 3018  
took Byzantium, 3150  
war with the Persians, 5066
- Constantine XI**, niece married Ivan III. of Russia, 3626  
Roman emperor, defeat by Turks, 3156
- Constantine, Arch of**, picture, 5012
- Constantinople**, capital of Byzantine Empire, 534, 1588, 3012, 3150  
sacked by Crusaders, 3154  
taken by the Turks, 3154, 3880, 5268  
what it is like, 3224
- Pictures of Constantinople**  
capture by Crusaders, 3155  
capture by Turks, 3155  
Galata Bridge, 3221  
Golden Horn, 3149  
mosques, 3223  
view of city, 3221
- Constantinople, Patriarch of**, 3150
- Constantius Chlorus**, marries and divorces Helena, 5321
- Constellation**, what it is, 2507
- See also Stars**
- Constellation, the**, and La Vengeance, 2900  
and L'Insurgent, 2900  
figurehead of, 4841
- Constitution of the United States**, disagreements when made, 2007  
making of the, 1389  
thirteenth amendment passed, 2022  
what it is, 1594
- Constitution, the**, and La Guerrière, 1398; with picture, 2901  
and the Java, 2902  
built, 2900  
takes the Cyane and Levant, 2901
- Constitutional Union Party**, 2010
- Constitution Island** (in Hudson R.), owned by father of Susan Warner, 2046
- Consumption**, its cause, 906, 2800  
microbe discovered by Koch, 907  
why it is so common, 241
- Contentment**, the benefit of it, 5170
- Continents**, continent under water, picture, 3007  
taper off to the south, 3006  
what they are, 3004
- Conundrums**, in verse, 3029
- Convention**, ruled France, 2272
- Converter**, Bessemer, with pictures, 5540, 5543
- Convict**, and the mouse, story, 499
- Convolvulus**, meaning of word, 5115  
picture, 3832  
sea, picture of, 5191
- Cook, Captain James**, discoveries and death, 1458  
explored New Zealand and Australia, 354  
founded Botany Bay, 1356  
pictures, 352, 1458, 4725  
set limits to Antarctic region, 4730  
visited Hawaii, 2181  
voyage to America, 2178  
voyages to Pacific islands, 1879
- Cook, Dr.**, and North Pole, 4727, 5214
- Cook, Eliza**: see Poetry Index
- Cooke, Sir William**, work in telegraphy, 4316
- Cookery**, class, picture, 3109  
why we cook food, 1056, 3048
- Cookstown**, town in Queensland, 1466
- Coon**, name for raccoon, 884
- Cooper, J. F.**, his book, Last of the Mohicans, 177

# INDEX

- Cooper, J. F.**, life, 1475; portrait, 1476  
trial of the spy, an extract, 4281
- Cooper, Peter**, note on, 4309
- Cooper Union**, picture, 4309
- Coot**, a bird, 1961; picture, 1960
- Copenhagen**, battle of, 3596, 4360  
capital of Denmark, 3598  
meaning of name, 3596  
picture, 3596
- Copernicus**, crater in the moon, 2224
- Copernicus, Nicholas**, discovered movement of  
planets, 1942, 1943  
his life, 1656  
portrait, 1655
- Cophetua, King**, and beggar-maid, 822  
picture, 823
- Copley, John Singleton**, life and art, 4147  
picture by, 4153
- Copper**, in Canada, 5599  
production of in U. S., 2660, 2664  
Rio Tinto mines, 3360  
used to carry electricity, 1294
- Copper Island**, Behring Sea, picture, 2731
- Coprolites**, what they are, 854
- Copts**, Egyptian Christians, 4256
- Copying**, simple apparatus, 1287
- Coral**, how coral grows, picture, 2341  
how it is made, 2336  
the various kinds, pictures, face 2334, in  
colour, 2335
- Coral Islands**, 919, 1876; picture, 919
- Coral snake**, with picture, 1378, 1379
- Corcoran, W. W.**, brought J. H. Payne's body  
from Tunis, 2954
- Corday, Charlotte**, arrest, picture, 4069  
killed Marat, 2274, 4062
- Cordilleras**, Andes mountains, 4573
- Cordova**, its cathedral, 3361  
town in Spain, 3352
- Cordova, Treaty of**, 4388
- Cords**, vocal cords, 5644
- Coralli, Marie**, novelist, 3740
- Corinth**, battle of, 2016  
taken by the Romans, 5130
- Corinth Canal**, picture, 5014
- Corinth, Isthmus of**, 5121, 5130
- Coriolanus**, his story, 5261
- Coriscrown**, game, and pictures, 5113
- Cork**, derivation of city's name, 5387
- Cork**, how to make cork picture-frame, and  
picture, 1723  
keeps water out, 683  
legs not made of, 5524  
specific gravity, 3816
- Cormon, Ferdinand**, his picture, 5127.
- Cormorant**, bird, can be tamed, 1951  
catches fish, 1522  
how the sheathbill robs it, 1626  
pictures, 1522, 1744
- Corn**, fields in France, 2396  
most valuable crop in United States, 2420
- Corn bunting**, lives in the fields, 2639
- Corncrake**, a bird, 1958
- Cornelia**, mother of the Gracchi, 416, 2632
- Cornell, Ezra**, laid a cable, 2474
- Cornflour**, as a food, 2926
- Cornflower**, description, 4289  
how it got its name, 5115  
how to prevent flowering, 1074  
how to treat plants, 1350  
pictures, 1350, 4284  
why Germans wear cornflowers, 1677
- Corn-Laws**, abolished, 2386
- Cornus**, what they are, 3973
- Cornwall, Barry**, his real name, 704, 4526  
poems: see Poetry Index
- Cornwall**, derivation of name, 5837  
tin mines, 194
- Cornwallis, Lord**, surrenders, with picture, 922,  
993; portrait, 981
- Corolla**, of a flower, 4110
- Corona Borealis**, group of stars, 2610
- Coronado**, exploration of, 260
- Coronium**, in sun's corona, 2088, 5023
- Corophium**, sea animal, 2587
- Correggio, Antonio**, his picture, The Birth of  
Jesus, 761  
painter, 758  
portrait, 759
- Corsairs**, pirates, 4260
- Corsewall Point Lighthouse**, picture, 4427
- Corsica**, island, 2398, 5264
- Cortereal, Gaspar**, voyage to Labrador, 3617
- Cortes**, conquest of Mexico, 269, 4382  
meeting with Montezuma, 5089  
portrait, 261
- Corandum**, in Canada, 5600
- Coranna**, battle of, 3360, 3362
- Cosmic dust**: see Sky dust
- Cossacks**, picture, 3629  
rebelled in Catherine's reign, 3631  
who they were, 3628
- Cost and value of diamonds**, 1570
- Costa Rica**, flag, picture in colour, 1640  
independent republic, 4392
- Coster, Lourens Janszoon**, printer, 2568
- Cotillon**, how to dance, 2262
- Cotinga**, bird, picture, 1736
- Cotton, Major Powell**, in Africa, 5569
- Cotton, Mrs. Powell**, picture, 5569
- Cotton**, amount produced by United States, 4808  
growth and manufacture, with pictures, 4807, 4808  
how chalcid fly saves plant, 3258  
how weather affects it, 2328  
through microscope, picture, 2325  
valuable crop in the United States, 2422
- Cotton-gin**, invented by Whitney, 4807  
invention of, 1825, 2667, 3533
- Cotton grass**, with picture, 5037
- Cottonian manuscripts**, 1162
- Cotton-thistle**, what it is like, 5271
- Couch grass**, picture, 1333
- Coughing**, a kind of expiration, 1638
- Countess**, the heroic countess, story, 3883
- Countess of Scarborough, the**, and the Bon  
Homme Richard, 2398
- Counting**, child's counting rhyme, pictures, 490  
why people count in tens, and picture, 1985
- ## COUNTRIES
- Child's Book of All Countries**  
The following are actual headings of the  
chapters in this section; the separate en-  
tries appear below, and in their proper  
places in the index.
- Africa outside the British Empire, 4251  
among the snow-capped Alps, 5669
- Australia, the great south land, 1355
- Austria-Hungary, 2851
- Babylonia and Assyria, 4971
- Canada, the Empire's wonderland, 1239
- England in the long ago, 191  
fighting for the crown, 747  
first holiday in Paris, 5331
- France as it is to-day, 2391
- France in the revolution, 2267
- Germany as it is to-day, 2747
- Holland and Belgium, 3455
- India, how it became an Empire, 1699
- India, the pearl of the East, 1545
- Italy, the land of romance, 3011
- Japan and Korea, 363
- Mexico and Central America, 4381
- month in Ireland, 5459
- New Zealand, the beautiful dominion, 1459
- Norway, Sweden and Denmark, 3591
- outposts of the British Empire, 1875
- Persia and Asiatic Turkey, 3873
- Russia as it is to-day, 3745
- South America of to-day, 4567
- Spain and Portugal, 3351
- Switzerland of the snows, 2969
- the Balkan Peninsula, 3149
- the beginnings of France, 2063
- the beginnings of Germany, 2521
- the British Empire in Africa, 1765
- the Chinese Empire, 105
- the end of a long struggle, 1093
- the founding of the nation, 427
- the glory that was Greece, 5121
- the grandeur that was Rome, 5259
- the heart of Asia, 3831
- the history of South America, 4497
- the Land of the Rising Sun, 5557
- the making of Germany, 2575
- the making of Russia, 3623
- the rise and fall of Persia, 5067
- the times of the Stuarts, 1021
- the times of the Tudors, 841
- the world around the Poles, 4719
- Turkey and the Balkans, 3219
- See also United States, and names of individ-  
ual countries

# INDEX

- Country**, people's sight, 4602  
country scenes, pictures, 3888  
how its area is measured, 5248  
why healthier than town, 2874
- Complet**, what it is, 343
- Coueurs des bois**, the "wood-runners," 5147
- Court, J.**, his picture, Mark Antony, 2917
- Courts**, the United States, description, 1597
- Cousin, Jean**, sculptor, 4162
- Covenanters**, persecution of, 5615  
service of, picture, 1761
- Coventry**, helped by Lady Godiva, 5386
- Cow**, derivation of word, 5233  
how it makes its milk, 1573  
its life story, 376, 2328  
picture, 249  
simple way to draw a, 5666  
the white cow, legend, 2744
- Cow-bane**: see Water hemlock
- Cowboys**, 1244
- Cow-catcher**, of an engine, 375
- Cowpens**, battle of, 992
- Cowper, William**, his life, 3905  
pictures, 1999, 3905, 3907  
poems: see Poetry Index  
wrote hymns, 2000
- Cowries**, shells, picture, 1417
- Cowslip**, description, 4610  
flowers, picture, 4608  
meaning of word, 5115
- Cow-wheat**, lives on other plants, 3830
- Coyne**, animal, 668; picture, 675
- Crab**, and her mother, fable, 3062  
greediness, 1411  
how it leaves its shell, 2329  
life-story, 2583  
lives in sponges, 2340  
pictures, 51, 1416  
various kinds, 2584, 2586
- Crab-apple tree**, 3445; picture, 3445
- Cracow**, old capital of Poland, 2858
- Craddock, Charles Egbert**: see Murfree, Mary N.
- Cradle**, a kind of scythe, 2668
- Craig, Mrs.**, life, 2599; portrait, 2593
- Crait**, family of snakes, 1378
- Cramp**, its causes, 3972
- Cramp**, used in picture-framing, 1924
- Cranberry**, 4112; description, 5038
- Crane**, and wise crab, fable, and picture, 4224  
how it differs from the heron, 1954  
length of life, 2328  
various kinds, with pictures, 1957  
wolf and crane, fable, 877
- Cranmer, Thomas**, arranged Book of Common Prayer, 845  
burnt to death, 846  
his death, with picture, 5069, 5070
- Crassus**, a wealthy Roman, 420, 5265
- Crater**, what it is, 5, 3229
- Crawford, F. Marion**, son of Thomas Crawford, 4842
- Crawford, Thomas**, sculpture of, 4842
- Crayfish**, 2586; picture, 2585  
protection of young, 5479
- Cream**, best form of fat for children, 2699  
separating from milk, picture, 1154  
why a good food, 2793  
why it forms on milk, 4340
- Creation**, described on Assyrian tablets, 4981
- Cressy**: see Cressay
- Creek Indian War**, in Alabama, 1399
- Creeping jenny**, plant, 4112
- Creeping soft grass**, picture, 1338
- Creeping wheat**, picture, 1333
- Cremone**, manufacture of violins, 1015
- Crocoles**, in South America, 4505
- Creon**, king of Thebes, 441
- Crocote**, poisons microbes, 1988
- Cross**, grown without soil, 2563  
pictures, 2563, 2564  
when to sow, 2971
- Cressy**, battle of, 750, 2704
- Crested dogtail grass**, with picture, 1335
- Crested wren**, egg of, picture, 1744
- Crustaceous layer of the earth**, 2887
- Crute**, early civilisation, 4196  
flag, picture in colour, face 1640  
palace discovered, 5122  
settlement formed by Spartans, 5124  
taken by the Venetians, 3154
- Crevasses**, in glaciers, 2960
- Crewel stitch**, with picture, 4996, 4997
- Cricket**, different kinds, 3141  
little boy and the, story, 2304
- Cricket on the Hearth**, extract from, 5508  
story of the book, and picture, 2288
- Crimea**, annexed to Russia, 3631
- Crimean war**, Florence Nightingale's work, 561  
the campaign, 1098, 3632
- Crimson lake**, colour, 3497
- Crispin, St.**, patron of shoemakers, 1013
- Cristofori, E.**, made first piano, 1015
- Crochet**, how to crochet, and pictures, 1348  
how to make a shawl, and pictures, 5107  
how to make crochet purse, 4028
- Crocker, Thomas**, wrote fairy tales, 1471
- Crocodile**, its use, 51  
life-story, 1221, 2327, 2328  
pictures, 51, in colour
- Crocus**, garden varieties, 5272  
how to treat crocuses, 1610  
its family, 5272  
what to do with its leaves, 573
- Croesus**, king of Lydia, *Æsop* visited his court, 2910  
defeated by Cyrus, 5058  
story concerning, 5312  
the question he asked of Solon, story, 1301
- Crofts, Ernest**, his picture of Napoleon, 3503
- Cromwell, Oliver**, his life, 1888  
how Charles II. treated his body, 4640  
procured cheap coal for poor, 800  
ruler of England, 1024  
story of his little granddaughter, 4336  
**Pictures of Cromwell**  
body dug up, 4641  
Cromwell listening to Milton, 3335  
dissolving Long Parliament, 1023  
his watch, 5165  
on battlefield of Dunbar, 1023  
on horseback, 1890  
portrait, 1896  
statue, 4168
- Cromwell, Richard**, called Tumbledown Dick, 1892  
his short rule, 1026
- Cromwell, Thomas**, his life, 2380; portrait, 2379  
statesman, 844
- Crookes, Sir William**, 2923
- Croquet**, how to play, and pictures, 4451
- Crosby, Frances Jane**, wrote hymns, 1998
- Cross**, a Celtic, picture, 5459  
seen by Constantine in a vision, 5322
- Cross-ball**, game, 1614
- Cross-bearer**, family of plants, 4110
- Crossfish**, a starfish, 2342
- Crossing-sweeper**, story, 1796
- Cross-stitch**, work in, 5529
- Crow**, and pitcher, fable, and picture, 3508  
fox and, fable, and picture, 463  
its habits, 1848  
length of life, 2328  
pictures, 1847  
what "as the crow flies" means, 5533
- Crowe, Eyre**, his picture of Defoe in the pillory, 1729  
his picture of Horrocks watching the transit of Venus, 1661  
his picture of Whitefield preaching, 3701
- Crowfoot**, chief of Blackfoot Indians, 4578
- Crowfoot**: see Buttercup
- Crown Colonies**, what they are, 1880
- Crowned crane**, and picture, 1957, 1958
- Crown imperial**, plant, 1203
- Crown knot**, with picture, 236
- Crown Point**, captured, 984
- Crowther, Samuel**, bishop, life, 2914, 3488  
portrait, 2909
- Crusades**, capture of Constantinople, picture, 3155  
Constantinople sacked, 3154  
crusaders fought against the Moors, 3354  
preached in France, 2066  
preached in Switzerland, 2964  
their cause, 3878  
their object, 1493  
Urban preaching, picture, 1586  
what they were, 596
- Crustaceans**, what they are, 2583
- Crying**, may be good or bad for us, 4746  
why a lump rises in the throat, 4602

# INDEX

**Crying**, why we cry when hurt, 424

See also **Tears**

**Crying** proverbs, game, 5202

**Ctesiphon**, taken by the Persians, 5066

**Cuba**, became United States' property, 3360

discovered by Columbus, 58

flag, picture in colour, 1640

lies south of the Bahamas, 1877

history, 2184

war in, 2188, 3538

what Columbus said of it, 4381

**Cuckoo**, frightens other birds, 3415

lays its eggs in nest of other birds, 1960

picture, 1960

what kind of bird it is, 1958

when it migrates, 2210

**Cuckoo-flower**: see **Lady's smock**

**Cuckoo-pint**, 4609

picture, 4608

**Cucumber-spit**, 3139

**Cucumber**, king of the cucumbers, picture, 1344

percentage of water, 1169

**Cudgel**, how to play it, 3614

**Culebra Cut**, in Panama Canal, 5632

locks of the picture, 5630

**Culebra Pass**, in Isthmus of Panama, 4392

**Cumberland**, derivation of name, 5387

Roman wall, picture, 199

**Cummins, Maria Susanna**, life, 2044

**Cunaxa**, battle of, 5064, 5076

**Cuneiform writing**, 4972

**Cunningham**, explored Australia, 356

**Cunningham, Allan**: see **Poetry Index**

**Cunningham, William**, said to have ill-treated

Nathan Hale, 3812

**Cunny Rabbit**, and the lion, story, 461

**Caere**, story from, 4936

**Cup**, made, and pictures, 4477, 4479

**Cupid and Psycho**, story, and picture, 1902

**Cupping**, dry, how it is done, 1575

**Cura, Villa de**, in Venezuela, 4503

**Curchod, Susanne**: see **Necker, Madame**

**Curfew**, its origin, 3025

meaning of word, 4603

**Curie, Monsieur**, found radium, 640

**Curiosity**, its importance in life, 5132

**Curius Dentatus**, and his refusal of a bribe, with picture, 2002

**Curlew**, bird, 1958; picture, 1959

**Curlew**, in Canada, 5210

**Currant**, dried currants are raisins, 642

its family, 4112; pictures, 651

**Current-bud mites**, picture, 3297

**Current**, in the sea, 1056

**Curtains**, how to decorate muslin curtains, with pictures, 5198

**Curtius, Marcus**, his sacrifice, 2301

**Curson, Lord**, adventure with a tiger, 139

**Cuscus**, animal, 862

**Cushion-cover**, how to make, 3286

**Custer, General**, massacre of, 3537

**Cuthbert**, describes Bede's death, 4336

**Cuts**, how to treat, 5110

**Cutter**, ship, what it is like, 3914, 3913

**Cuttings of plants**, how to pot, picture, 1350

how to treat, 572, 1350

**Cuttlefish**, 2452; pictures, 51, 2450

**Cuvier, Leopold Christian**, his life, 852

pictures, 851, 853

**Cusco**, capital of the Incas, 4504, 4574

Cusco Indian, picture, 4503

**Cyaxares**, king of Media, 5057

**Cycle tyre**, how to mend, 4249

**Cyclic changes**, what they are, 2279

**Cyclops**, one-eyed giants, 69, 5004

**Cymric**, language of the Celts, 469

**Cyprus**, how it was cleared of locusts, 3141

settlement formed by Spartans, 5124

useful as watch-tower, 1876

**Cyrus the Great**, 5172

fought against his brother, 5064

his conquests, 5067

his tomb, 5065

story concerning, 5312

**Cyrus the Younger**, 5076

**Cythera**, the embarkation for the Isle of

Cythera, Watteau's picture, 4594

**Czechs**, settled in Bohemia, 2852

## D

**Dace**, a fish, 2681; picture, 2679

**Dacians**, who they were, 5268

**Dacres, Captain**, commander of *La Guerrière*, 2901

**Daffodil**, a bulb root plant, 573

description, 4610

how it got its name, 5115

how to arrange in a vase, 578

how to make paper daffodils, 4141

in gardens, 5272

petticoat hoop daffodil, 1610

picture, 4613

**Dagger moth**, picture, 3413

**Dagmar**, princess of Denmark, 3598

**Dahlia**, how it got its name, 5115

how it should be treated, 1817, 3726

must be staked, 3514

picture, 1817

preserving from earwigs, 1509

when to plant, 830, 3398

when to take it up, 4462

**Daisy**, awake and asleep, picture, 1264

how it got its name, 5115

painting a daisy, with picture, 2894

petal, through the microscope, 2321

the various kinds, pictures, 4108

what it is like, 3952, 4112

when to sow, 719, 1715

**Dalai Lama**, chief priest of Tibet, 3938

**Dale, Sir Thomas**, as governor, 514

**Dalecarlia**, district in Sweden, 3600

**Dalmatia**, Austrian province, 2860

**Dalou, Jules**, influence as a sculptor, 4162

**Dalton, John**, discovered atoms, 1372, 1666

**Daltonism**, colour-blindness, 4509

**Dalton Mill**, the giant of, legend, 465

**Dam**, at Assouan, 3599

of a reservoir, pictures, 2104

**Damascus**, city in Syria, a seat of the caliph's

court, 3878

**Damask**, was named from Damascus, 4532

**Damask rose**, how it got its name, 5115

**Dame's violet**, picture, 5280

**Damien, Father**, lived in Molokai, 2182

work among lepers, with picture, 66; portrait, 66

**Damon**, his friendship with Pythias, 626

**Dampier, William**, explorer, 354, 1355

picture, 354

**Dampness**, why it makes us ill, 3378, 4595

**Danae**, the mother of Perseus, 1049

**Danby, Earl of**, tried to bribe Marvell, 4557

**Dancers**, a warning to dancers, tale, 2301

**Dancing Bear**, a rock, picture, 1069

**Dancing madness**, 3303

**Dandelion**, how it spreads its seed, 3829

how the flower is made up, 3952

meaning of the name, 5115

**Danelaw**, where the Danes lived in England, 2701

**Danes**, the Dane who gave water to his enemy, 468 in England, 430, 432, 2701

See also **Vikings**

**Daniel**, explained writing on the wall, 4984

**Daniell battery**, 1076; picture, 1075

**Danish names**, in England, 432

**Dante**, how Giotto painted his portrait, 2780

life and writings, 5219

lived in Florence, 3018

portrait, 5217

work illustrated by Botticelli, 4950

**Danton, Georges Jacques**, leader in the French

Revolution, 1142, 4062

portrait, 4063

**Danube**, river, its course, 2754, 2851, 2856, 3222

**Danzig**, town in Germany, 2750

**D'Arblay, Madame**: see **Hurney, Fanny**

**Dardanelles**, a strait, 3149, 5172, 5062

**Dardanus**, the founder of Troy, 3314

**Dare, Virginia**, 941

**Darent**, river in Kent, 200

**Daniel Pass**, Russia, its road, 3750

**Darien, Gulf of**, its position, 4502

**Darius I.**, king of Persia, his reign, 5068

made war on the Greeks, 1700, 1803

palace at Persepolis, pictures, 5067, 5063

**Darius II.**, king of Persia, his reign, 5064



# INDEX

- Darius III.**, king of Persia, flight at Issus, picture, 5069  
his reign, 5065  
routed, 1306
- "Dark (The) and Bloody Ground,"** 1820
- Darkness**, before dawn, 4235  
fear in the dark, 2674  
light and darkness together, 3082  
sight in the dark, 153  
size of dark and light things, 3384
- Darling, Grace**, 1788  
picture, 1735
- Darling River**, in Australia, discovery, 266
- Darlington**, first railway, 614
- Darn**, how to darn, and picture, 3515
- Darnley, Henry Stuart, Lord**, husband of Mary Queen of Scots, 846, 3088
- Darter**, a bird, 1951; picture, 1950
- Darwin, Charles**, discovery about worms, 3255  
discovery of fossil mastodon, picture, 850  
evolution theory, 855  
his life, 856  
his search for truth, 5029  
method of study, 4511  
on animals' maternal instinct, 5133  
on Scotland and Wales, 3228  
on unwise people, 4119  
opinion on speaking and singing, 4073  
portrait, 851  
proved that birds carry seed, 2210, 3828  
told of coral islands, 919  
tried if plants could hear, 3539  
wrote *The Origin of Species*, 2883
- Darwin, Mount**, in Tierra del Fuego, 4500
- Darwin, Sir George**, discoveries about tides, 2280, 4342  
on the earth's speed, 4822  
on the moon's distance from the earth, 2226
- Daskam, Josephine Dodge**: see Bacon, Mrs. J. D. D.
- Dasypus**, a marsupial, 862; picture, 865
- Date**, 642; picture, 647
- Date-line**, its use, 678
- Daudet, Alphonse**, his book, *Tartarin in the Alps*, 4665  
his book, *Tartarin of Tarascon*, 4537
- D'Aulnoy, Madame**, her fairy tales, 1467
- David**, friend of Tigliath Pileser, 4977  
statue by Michael Angelo, 4952
- David**, names derived from David, 4752
- David I.**, of Scotland, reign, and picture, 3080
- David II.**, king of Scotland, 3084
- David, St.**, the fairies of, story, 2608
- David Copperfield**, book by Dickens, 2314  
story of the book, and pictures, 2827
- Da Vinci, Leonardo**: see Leonardo da Vinci
- Davis, Jefferson**, orders attack on Ft. Sumter, 2012  
president of the Confederacy, with picture, 2010, 2011
- Davis, John**, captured, 2022  
explored America, 267  
explorer, 4722
- Davy, Sir Humphry**, discovered laughing gas, 1196  
discovery of electric light, with pictures, 654, 657  
experimenting with light, picture, 654  
helped Faraday, 2119, 4314  
invented the safety-lamp, 1871, 4319  
made electric light, 656  
portrait, 4313  
thought gas could not be used, 394
- Dawlish**, parson and clerk, legend, 1983
- Dawson City**, in Canada, 1244
- Day**, getting longer, 37, 2281  
how the days got their names, 4532  
meaning of day and night, picture, 78  
story of the days, 83  
where it begins, 677
- Day-fly**: see May-fly
- Dead-leaf butterfly**, 3414  
pictures, 3831
- Deadly nightshade**, pictures, 3895
- Dead-nettle**, red, picture, 4290  
white, description, 4292  
picture, 4290
- Dead Sea**, in Palestine, 3874  
one cannot sink in it, 1993
- Deaf and dumb language**, with picture, 5291
- Deafness**, effect of loud noises, 2458
- Dean, Peter**, gave life for his companions, 3108
- Dearborn, Henry**, to march against Montreal, 3901
- Death**, disease its cause, 2622  
should not be feared, 4745  
the man who carried death, story, 3789  
the men who went to kill death, *Canterbury Tale*, 440  
why there is death, 2623
- Death adder**, lives in Australia, 1378
- Death's-head moth**, enters bee-hives, 2826, 2993; picture in colour, face 3141
- Death-watch**, insect, 3142; picture, 3147
- Decatur, Stephen**, at Tripoli, 2900  
in command of the "United States," 2902  
picture, 2899
- Deccan**, its progress, 1700  
the southern half of India, 1546
- December**, how it got its name, 4521  
what the name means, 4533
- Decimal system**, what it is, 1985
- Decimetre**, a tenth part of a metre, 3671
- Decius Mus, Publius**, how he gave his life for Rome, and picture, 2630
- Declaration of Independence**, committee, portraits of, 987  
writing the, 986
- Decomposition**, its meaning, 1194, 1665
- Deeds**, why we do things, 5131
- Deer**, behaviour of fawns, 5479  
deer-forests not forests, 5524  
how the antelope hunts them, 140  
how the lion hunts them, 132  
how the word is derived, 5233  
how they are attacked by eagles, 1840  
pictures, 51, 381  
the various kinds, 382
- Deerfield**, massacre of, 880
- Defoe, Daniel**, his book, *Robinson Crusoe*, with pictures, 1231, face 1725  
his life, 1726  
in the pillory, picture, 1729  
plague-stricken (the) home, an extract, 5596
- Deland, Mrs. Margaret**, sketch of work, 2049
- Delaware**, colony of, 521  
slave-state, 2010  
stays in Union, 2012
- De la Warr, Lord**, as governor, 514
- Del Cano, Sebastian**, the first man to sail round the world, and statue, 60
- Deift**, old town of Holland, 3458
- Delhi**, famous old city of India, 1548  
occupied by the Sepoys, 1913  
where the Turks reigned, 1702
- Della Quercia, Jacopo**, a sculptor, 4161
- Della Robbia, Andrea**, an artist, 2790
- Della Robbia, Giovanni**, an artist, 2790
- Della Robbia, Luca**, his life, 2790  
his picture of five singers, 2149  
modelled figures, 4161; portrait, 2779
- Delphi**, oracle, 413, 550
- Del Piombo**, life, portrait, 4945
- Delta**, how it is made, 4826
- Demavend, Mount**, in Persia, 3881
- Demeter**, a goddess, 5126
- Democrats**, first called Republicans, 1394  
party division, 2010
- Democritus**, and Hippocrates, picture, 3163  
his search for truth, 3162
- Demosthenes**, his life, 1304, 5130
- Dendera**, temple: see Hathor's temple
- Denmark**, became independent, 3596  
flag, picture in colour, face 1640  
history and geography, 3591  
how it got its flag, 1640  
how to reach it from England, 3598  
lost Schleswig and Holstein, 2579  
map, 3601  
royal council abolished, 3596  
royal family's influence on Europe, 3598
- Denmark Monument**, its pictures, 3598
- Denny, William**, built steamboats, 2472
- Density**, what it is, and pictures, 542, 685
- Dentine**, part of a tooth, 2099
- De Quincey, Thomas**, his life, 4684  
pictures, 4675, 4685
- Derby, Charlotte, Lady**, how she defended Lathom House, and picture, 4718, 4716  
portrait, 4718
- Dermis**, a layer of the skin, 1910
- De Ruyter, M. de**, fought against the English, 3463

# INDEX

- De Ruyter, M. de**, portrait in Ryks Museum, 3464
- Derwentwater, Lake**, picture, 5017
- Descartes, Rene**, his wooden daughter, 3210  
 portrait, 4625  
 what he did for science, 4620
- Desert**, a desert made fertile, picture, 2419  
 crossed by camels, 276  
 desert, picture, 408  
 forests and deserts, 3071  
 how it is made, 3072  
 life in the Painted, 3589  
 mirage, pictures, 5018  
 of a red colour, 3073
- Designs**, card that helps us make, 540  
 designs made from coins, picture, 3919  
 simple ways of making, 3919
- Desman**, shrew, 674; picture, 673
- Desmodus**, a bat that attacks cattle, 766
- De Soto, Hernando**, 260; portrait, 261
- Dessert**, the world on a dinner-table, story, 5206
- Determinants**, in a plant, 4442
- Detroit**, capture of, 1398, 3901
- Detroit**, the, a ship, 4279
- Devil-crab**, 2584
- Devil-fish**, the cuttle-fish, 2452
- Devil's coach-horse**, the rove beetle, 3263
- Dewar, Sir James**, his work with liquid air, 1194, 4050
- Dewdrop**, on spider's web, picture, 306  
 what it is, 304
- Dewey, Commodore**, battle in Manila Bay, 2184
- Dewey, Thomas W.**, art of, 4152
- Diagonal**, what it is, 3835
- Diameter**, its meaning, 411, 2081
- Diamond**, history of the word, 4603  
 how it refracts light, 5177  
 is made of carbon, 286, 839, 1289  
 specific gravity, 3816  
 the rich man's diamond, story, and picture in colour, 4934  
 why diamonds are costly, 1570, 4746  
 why it cuts glass, 3238  
 why people wear diamonds, 1570
- Diana**, goddess, in the woods, picture, 84  
 slew Orjon, legend, 3313  
 was worshipped, 84
- Dianthus**, the pinks, 1817, 2042
- Diaphragm**, a muscle of the body, 1633  
 how it works, picture, 1637
- Diatoms**, picture, 2340
- Diaz, Bartholomew**, discoverer, 59
- Diaz, General Porfirio**, his work, 4392
- Dibdin, Charles**, poems: see Poetry Index  
 portrait, 3737  
 wrote sea-songs, 3738
- Dickens, Charles**, his life, 2312  
 poems: see Poetry Index  
 portrait, 2307  
 song of the kettle, an extract, 5508  
 the stories of Dickens, and picture, 2430  
 with characters from his books, picture, 2313
- His Books**
- A Christmas Carol, 2159  
 Barnaby Rudge, 2761  
 David Copperfield, 2827  
 Dombey and Son, 2554  
 Martin Chuzzlewit, 2637  
 Nicholas Nickleby, 2633  
 Oliver Twist, 2551  
 The Chimes, 2285  
 The Cricket on the Hearth, 2288  
 The Old Curiosity Shop, 2757
- Dicky show a Light**, game, 1072, 3516
- Dictionary**, its use, 1929
- Diderot**, leader in French Revolution, 4054  
 opinion on speaking and singing, 4073  
 portrait, 4053
- Dido**, queen of Carthage, 72
- Dielman, Frederick**, an artist, 4152
- Diervilla**, description of, 4839
- Diet**: see Food
- Die Wacht am Rhein**, the German national song, 2754
- Diffusion of gases**, what it is, 3090, 4442
- Digestion**, how food is digested, 2206, 2343  
 how it is affected by the brain, 3109
- Dimple**, angel of the dimples, story, 2168  
 what it is, 2673
- Dinaric Alps**, their position, 3222
- Dingan**, Zulu king, 1769, 3486
- Dingan's Day**, a great Boer victory, 1769
- Dingo**, the wild dog of Australia, 500
- Dinner**, at the inn, story, with picture, 5159
- Dinner-table**, things to make for it, 2255
- Dinoceras**, monster, picture, 44
- Dinornis**, skeleton, with picture, 855
- Dinosaurs**, prehistoric lizards, 48
- Dinwiddie, Governor**, sent Washington on journey, 882
- Diocletian**, emperor of Rome, persecuted the Christians, 482, 533  
 portrait, 534
- Diomedes**, a pirate, 5308
- Dionysius**, ruler of Syracuse, 626
- Dionysius**, story concerning, 5312
- Diphtheria**, disease of the throat, 1636
- Dix**, king of the underworld, 5316
- Disbudding**, causes fine blossoms, 927
- Disc**, its shape, 1334
- Discobolus**, Greek statue, 4160
- Discontinuous spectrum**, what it is, 2862
- Discord**, use in music, 4918  
 what it is, 2620, 4859
- Discovery**, an exploring vessel, 4724
- Disease**, creation of new diseases, 3799  
 how we can learn from monkeys, 3077  
 partly our own fault, 2623  
 reason of infection, 3972
- Disraeli, Benjamin**: see Beaconsfield
- Distance**, how to judge, 1641, 5290  
 in a picture, 1642
- Diver**, pearl-divers, picture, 172  
 why he has lead on his boots, 3760
- Diver-petrel**, 1626
- Diving**, how to swim and dive, 3819  
 pictures, 3818  
 why people rise to the surface, 4234
- Dizziness**, its cause, 3437  
 why it causes everything to spin round, 2232
- Dixie**, history of song, 2954
- Dnieper**, river in Russia, 3623, 3745
- Dniester**, river in Russia, 3631
- Dockyards**, started, 1029
- Doctor**, of Burton Port, story, 468  
 the world's great doctors, 4195
- Doctor Syntax**, rock, and picture, 1068
- Dodder**, plant, 3830; picture, 3832
- Dodge, Mary Hayes**, life, 2047
- See also Poetry Index**
- Dodgson, Charles**: see Carroll, Lewis
- Dodo**, bird, 47, 1423; picture, 1425
- Doe**, the female deer, 382
- Dog**, and his shadow, mistake concerning, 5524  
 brave little dog of the wood, story, with picture, 5180  
 does not cry, 5383  
 dog and ass, fable, with picture, 2849  
 dog and the shadow, fable, 560  
 dog in manger, fable, with picture, 189  
 dog that came home again, story, with picture, 4799  
 dog that knew his master, story, 4003  
 dogs that became friends, 5308  
 drawing of a dog from squares, 1073  
 draws sledges in Arctic regions, 269  
 how it knows strangers, 1132  
 how the word is derived, 5233  
 "huskies" in Alaska, 4042  
 intelligence of the, 5329  
 its brain, 3716  
 length of life, 2328  
 making a kennel for, and picture, 5105  
 story concerning a, 5313  
 story of Gelert, 5208  
 the different kinds of dogs, 500  
 the dog and the wolf, fable, 1979  
 turns round before lying down, 4596  
 ugly (the) dog that became an angel, 5307  
 various kinds, pictures, 498, 501, 503  
 way to draw a dog, picture, 2034  
 what "to go to the dogs" means, 5534  
 why a dog feels the heat, 1912  
 wild dogs, 142; picture, 137  
 will travel back to its home, 5411
- Dog daisy**: see Ox-eye daisy
- Dogfish**, 1867, 2446; picture, 2447
- Dog rose**, with pictures, 4109
- Dogtail grass**, picture, 1335

# INDEX

- Dogwood**, flowering, 4490  
 flowers, 4491  
 picture, 4486  
 round-leaved, 4492
- Doll**, a doll's Christmas hamper, 2131, 2258  
 bracelets and necklaces, with picture, 2033  
 doll that was once a little girl, story, and pictures, 5071  
 dolls of many nations, with picture in colour, face 3392  
 how to make a bonnet, 1613  
 how to make a frock, and pattern, 1077  
 how to make a table with reels, and picture, 4352  
 how to make dolls from clothes-pegs, and picture, 4457  
 how to make house, and picture, 2031  
 how to make John Chinaman, and pattern, 460  
 how to make knickers, and pattern, 835  
 how to make of cardboard, paper, and wool, with pictures, 341, 342  
 how to make stays, and pattern, 717  
 how to mend a broken head, 4249  
 in old Egyptian graves, 5100  
 made from cork, and picture, 450  
 making a chemise, and pattern, 577  
 making furniture, and pictures, 1717, 1814
- Dolomite**, rock, where to find, 4246
- Dolphin**, 207, 1088; pictures, 48, 1087
- Domby and Son**, story of the novel, 2554
- Domesday Book**, what it was, 436
- Domest, Alfred**: see Poetry Index
- Dominic, St.**, life, 3986; portrait, 3981
- Dominican Republic**, flag, picture in colour, face 1640
- Dominoes**, games with dominoes, 4030  
 tricks with dominoes, and pictures, 4139
- Domitian**, emperor of Rome, his rule, 531
- Donatello**, in the Marble Faun, 5432
- Donatello, Donato**, his life, 2782, 2788  
 his monument of Gattamelata, 4164  
 his St. George statue, 2779, 4167  
 statue, 2779  
 three of his best works, 4161
- Donizetti, Gaetano**, a composer, 3252
- Donkey**, how the word is derived, 5233  
 pictures, 248, 271, 2378  
 the donkey and the lions, story, 2608  
 the donkey's wish, fable, 2378  
 what kind of animal it is, 272  
 why thistles do not hurt it, 2458
- Donne, Dr. John**: see Poetry Index
- Don Quixote**, story of the book, and pictures, 899, 948
- Don River**, in Russia, 3623, 3750
- Door**, how it is made, 1510  
 how to draw, 3712; picture, 3713  
 of safety-vaults, 5373
- Dora**, Sister Dora and the toilers of Walsall, story, and picture, 1653
- Doras**, the, renamed Bon Homme Richard, 2898
- Dorcas**, how she clothed the poor, and picture, 4334
- Dorcas**, what the name means, 5233
- Dore, Gustave**, picture, Don Quixote, picture of Cyrus returning vessels to the Jews, 5172
- Dorians**, Hellenic tribe, 5124
- Dormouse**, animal, 770; picture, 771
- Dorset**, derivation of name, 5387  
 the brave schoolgirl of, story, 4831
- Double decomposition**, a way of making compounds, 1667
- Double eye**, a fish, 2682; picture, 2683
- Doublets**, what words they are, 3240
- Doudney, Sarah**: see Poetry Index
- Douglas, Lord James**, knight of Bruce, 3084
- Douglas, Stephen A.**, and Kansas, 2010, 3536  
 nominated for presidency, 2010
- Douglas pines**, where they grow, 1244
- Doulton, Sir Henry**, and pottery, 4478
- Douro River**, where it is, 3352
- Dove**, and the ant, fable, and picture, 189  
 doves, picture, 48  
 what kind of bird it is, 2214
- Dovecot**, picture, 3890
- Dover**, harbour works, picture, 4433
- Dovetails**, in woodwork, 1347
- Dowelled joints**, 1511
- Downie, Captain**, commander of British fleet, 2902
- Doyle, Sir J. H.**: see Poetry Index
- Doyley**, of hairpin work, and picture, 4459
- Dragon-boat festival**, with picture, 111
- Dragon-fly**, 3260, 4215, 5021  
 pictures, face 3140 in colour, 3257
- Dragon pigeon**, its eyes, 2215
- Dragon's arm**, plant, picture, 3831
- Dragon's Teeth**, sowing the, 186
- Drainage**, need for good drainage, 3146
- Drake, Edwin L.**, drove the first oil well, with picture, 4131
- Drake, Joseph Bodman**: see Poetry Index
- Drake, Sir Francis**, beat the Spaniards, 848  
 his exploration in the south, 4730  
 picture, 261  
 playing bowls, picture, 849  
 sailed round world, 60  
 sought treasure in South America, 4502  
 voyage around the world, 266
- Drake, the**, sloop of war, and the Ranger, 2898
- Drakensberg**, mountains in Africa, 1768
- Draper, Herbert**, his picture of a child gazing at the sunlight, 3635
- Draughts**, fox and geese game, 4672  
 how to play, and pictures, 4460
- Drave River**, in Hungary, 2860
- Drawing**, and painting a spray of leaves, 1453  
 animal drawing with the brush, 4095  
 colours, and how to use them, 2654  
 conventional, for decoration, 2895  
 drawing a pig, game, 5000  
 drawing and painting a daisy, 2894  
 drawing from memory, 3787  
 figure drawing, 4467  
 how to correct our own work, 4467  
 how to draw a house, 4039  
 how to draw a jam-jar, 973  
 how to draw a picture with 12 lines and a dot, 5451  
 how to draw a plain envelope, 492  
 how to draw an open book, 2415  
 how to draw hundreds of faces, 5109  
 how to draw in chalk, 253, 3787  
 how to draw straight lines, 1213  
 how to draw to scale, 445  
 how to draw with both hands, 1934  
 how to group objects, 4240  
 how to make and paint patterns, 2174  
 how to make drawings from squares, 1073  
 how to make first picture, 252  
 landscape drawing, 4467  
 making circles and filling them in, 3428  
 measuring things from a distance, 3134  
 outlines, game, and picture, 5113  
 pen-and-ink drawing, 4302  
 pictures of leaves and twigs, 732  
 prehistoric drawings, picture, 3400  
 putting on a graduated wash, 3292  
 simple patterns with flowers, 3374  
 simple way to draw a cow, 5666  
 the right way to draw a box, 1693  
 the right way to use colour, 3496  
 the way to draw a door, 3712  
 pictures to every lesson
- Drawn-thread work**, and pictures, 2351
- Drayton, Michael**, 3330  
 poems: see Poetry Index
- Dreams**, do we see ourselves in dreams? 5383  
 remembrance of dreams, 3390  
 what they show, 423  
 why we dream, 2671
- Dred Scott Decision**, what it was, 2009
- Dresden**, battle of, 4364  
 city, 2578, 2750  
 picture, 2749
- Drew, Dorothy**, picture, 2388
- Drift**: see Gravel
- Drift men**, 192
- Drinker moth**, eggs, etc., picture, 2987
- Driver ant**, 2950
- Driving match**, game, 2252
- Drogheda**, taken by Cromwell, 1889
- Droitwich**, what the name means, 5387
- Dromedary**, a camel used for riding, 276  
 how it got its name, 5234
- Drowning**, how to restore the half drowned, 5110  
 rising three times idea, 2235

# INDEX

**Druids**, the priests of the Britons, 196  
**Drum**, how to mend, 4249  
**Drummer's knot**, 236  
**Dryden, John**, life, 3903; portrait, 3907  
**Drygalski, Professor von**, discoverer, 4723  
**Dublin**, description of, 5460  
     what the name means, 5388  
     zoo famous for lions, 135  
**Dublin, University of**, 5460  
**Dubois, Paul**, influence as sculptor, 4162  
**Du Challa, Paul**, discovery of gorillas, 1766, 3076  
**Duchess**, who sat in rags, story, with picture, 4640  
**Duck**, a brood of ducklings, picture, 1678  
     descended from wild birds, 1513  
     swims by instinct, 1130  
     the various kinds, 1520  
     why it never gets wet, 155  
**Duck-billed platypus**, 859  
     dwelling, 5417  
     history, 5570  
     picture, 861  
**Duck under the water**, game, 2571  
**Du Cros, Harvey**, and rubber, 5678  
**Dudley, Lord Robert**: see Leicester, Robert  
     Dudley, Earl of  
**Duedin, New Zealand**, 1460, 1464  
**Dufall, Monsieur**, tells how reading for the blind was invented, 1982  
**Dufay, Monsieur**, experiments, 2115  
**Dufferin, Lord**, and Burmah, 1880  
     as governor and diplomat, 4106  
**Dugong**, animal, 1088; picture, 1087  
**Duma**, state council of Russia, 3753  
**Dumas, Alexandre**, his book, *The Count of Monte Cristo*, 4325, 4407  
     life and writings, 5221; portrait, 5217  
**Dumas, Jean Baptiste**, chemist, 4202  
**Dumbness**, its cause, 2456  
**Dunbar**, battle of, 1892; picture, 1023  
**Duncan**, king of Scotland, slain, 3079  
**Duncan, Mrs. M. L.**: see Poetry Index  
**Dungl**, king of Babylon, 4984  
**Dunkirk**, sold by Charles II., 1028  
**Dunlop, John**, invented pneumatic tire, 5678  
     made pneumatic tyre, 2835  
**Duodecimal system**, what it is, 1985  
**Dupleix, Francois**, in India, 1704  
**Durer, Albert**, his life, 1258; picture, 1261  
**Durham, Lord**, as governor of Canada, 4097  
     governor-general, 3901  
**Durham**, what the name means, 5388  
**Dust**, raised by motor-car, picture, 4113  
     through a microscope, picture, 2324  
     what becomes of it, 3035  
     where it comes from, 4113  
     why a house becomes dusty, 4748  
**Dustin, Mrs.**, escape of, with pictures, 880  
**Dutch**, foundation of colonies, 3462  
     settled in Cape Colony, 1768  
     story dealing with New Amsterdam, 2245  
     trade with India, 1700  
     trade with Japan, 368

## Pictures of the Dutch

children, 3455, 3461  
 Dutch home, 3461  
 girls weeding stone pavement, 3461  
 national costume, 3461  
 people of long ago, 3459  
 street, with man in native costume, 3457

## See also Holland

**Dutch East India Company**, 3462  
**Dutch family**, of cork, and picture, 450  
**Dutch Guiana**: see Guiana  
**Dutchman's breeches**: see Dicentra  
**Dwarf**, dancing dwarf (the), illusion, 5667  
     who feared drums, story, 5207  
**Dwarf French beans**, with picture, 3176  
**Dwarf gentian**, 1816  
**Dwarf trees**, in Japan, and picture, 2079  
**Dwina River**, discovery by Onther, 4720  
**Dyce, Wm.**, his picture of George Herbert in his garden, 1997  
**Dye ken John Peel?** history of song, 5493  
**Dyer, Sir Edward**: see Poetry Index  
**Dyes**, from coal-tar, 2507  
**Dynamics**, the science of motion, 3552  
**Dynamite**, Greek for power, 4603

## E

**Eadwald**, king of Kent, 1320  
**Eagle**, adopted as arms of Russia, 3626  
     American bald, or sea, 1839  
     length of life, 2327, 2328  
     pictures, 51, 1838, 1839  
     the different kinds, 1839  
     what kind of bird it is, 1840  
     why lectern is made like an eagle, 5650  
**Eagle-girl**, of the mountains, story, and picture, 711  
**Eagle owl**, 1848; picture, 1847  
**Eagle's wings**, stalactite, picture, 4816  
**Eaglets**, climb for the eaglets, story, 481  
**Eanswith, St.**, founded a nunnery, 1320  
**Ear**, how to get anything out of it, 3397  
     its construction, 3868  
     machinery of the ear, picture, 3866  
     See also Hearing and Sound  
**Earache**, causes, 157  
**Eared pheasants**, 1515; picture, 1516  
**Earl's daughter and beggarman**, story, with picture, 1322  
**Early, Jubal Anderson**, in the Shenandoah Valley, 2020  
**Ear-rings**, do not affect the eyes, 3762

## EARTH

### Child's Story of the Earth

The following are actual headings of the chapters in this section. The separate entries appear below, and in their proper places in the index.  
 air, fire, and water, 937  
 air is part of the earth, 3691  
 changes always going on, 1869  
 circumference, 411, 3813  
 comets, meteors, and sky-dust, 5295  
 coronium not found on earth, 5023  
 crosses the path of meteors, 2509  
 diameter, 411  
 different kinds of heat, 4179  
 distance from the stars, 2614  
 distance from the sun, 150, 2082  
 forests and deserts, 3071  
 has been burnt, 1371  
 heat and temperature, 4473  
 hot things and cold things, 4047  
 how heat travels, 4319  
 how heat works for us, 4365  
 how it lost its light, 3378  
 how its pull affects weight, 3234  
 how land and water are placed, 3006  
 how life began on the earth, 167  
 how long life has existed on earth, 4744  
 how movement changes matter, 3465  
 how the air is kept round it, 5024  
 how the earth was made, 307  
 how things are measured, 3669  
 how we know it is moving, 2507  
 how we know it is round, 5  
 is a moon to the sun, 3032  
 is getting smaller, 4548  
 its age, 407  
 its attraction, 1062  
 its density, 542, 2229  
 its different movements, 80, 3469, 4345  
 its gravitation, 618  
 its magnetism, 5254  
 its movement, 1572, 1577, 1578, 2281, 4821  
 its size, 1944, 2081  
 its surface is not dull, 1644  
 its weight, 1128  
 life of the earth, 4079  
 moon's effect on its movements, 34  
 movement at Poles and Equator, 5167  
 music and noise, 4757  
 nature's great mysteries, 5253  
 not floating in space, 1130  
 once below water, 2798, 2883  
 once joined to the moon, 2226  
 position with regard to the sun, 2426  
 the ancient name for it, 2234  
 the behaviour of a sound, 4913  
 the big ball we live on, 1  
 the colour of the stars, 2715  
 the crust of a fiery furnace, 3227  
 the earth as it is to-day, 541  
 the earth is always moving, 77  
 the earth's changing face, 3003

# INDEX

- Earth**, the earth's crumbling crust, 2881  
the fire inside it, 1060, 3377, 3431  
the fire that feeds itself, 637  
the great marvel of water, 1167  
the making of compounds, 1666  
the making of other worlds, 2861  
the making of the elements, 1419  
the moon, the lamp of night, 2219  
the most important elements, 1289  
the pressure of the air, 3941  
the pull of the earth, 3835  
the shaping of the earth, 403  
the size and weight of things, 3813  
the soil and its uses, 3339  
the stars as we see them, 2609  
the stuff in it changes, 1128  
the sun and his family, 143  
the sun's family of worlds, 2423  
the waves of sound, 4581  
the wonder of the sun, 2081  
the wonder of time and tide, 2279  
the wonderful keyboard, 5173  
the world inside an atom, 1553  
three kinds of compounds, 1797  
three wonderful gases, 1193  
throws its shadow on the moon, 1862  
what it looks like to other planets, 2226, 2800, 4345  
what it was formed from, 3432  
what it would be like without water, 3005  
what its axis is, 2279  
what light is made of, 5039  
what the earth is made of, 837  
what water is made of, 1039  
what we should find if we dug through it, 2887  
what would happen if gravitation ceased, 1577  
why things move, 3547  
will become like the moon, 1367  
will probably stop spinning, 4120  
wonderful, wonderful music, 4859  
worlds in the skies, 1939
- Pictures of Earth**  
a crack in the earth a mile deep, in colour, face 836  
as a globe before it shrank, 146  
as seen from the moon, 2225  
crust showing remains of animals, 2887  
earth and the moon in space, 149  
effect of nearness to centre on weight, 3551  
how mountain ranges were formed, 407  
how we know the earth is round, 5, 6  
its distance from the planets, face 1  
its history written in its rocks, 2884, 2885  
its path, 2219  
not a perfect ball, 411  
on a summer's night in England, 79  
on a winter's night in England, 79  
shadow on the moon, 1865  
shrank as an apple does, 407  
the ball of fire that became the earth, in colour, face 308  
the cloud of which the earth is made, 148  
what the face of the earth is like, 408
- See also World**
- Earth-hog**, name for the aardvark, 1002
- Earthquakes**, damage, south, 3537  
in Philippines, 2182  
in Sicily, 3229  
in the West Indies, 1878  
occur in the sea, 3430  
pictures, 3227, 3230  
their cause, 2232, 2888, 3232  
what they are, 77  
why they do not occur in England, 4600  
why they shake only part of earth, 3763
- Ear-trumpet**, how it helps people to hear, 3864, 4584, 5022
- Earwig**, does not enter the ear, 2328  
in dahlias, 1509  
its life-story, 3142; pictures, 2326, 3147
- Easter eggs**, how they are made, pictures, 2242  
how to make our own, 3281  
various kinds, pictures, 3281
- Eastern Church**, became powerful, 3158  
founded 3150  
the Church of Russia, 3624
- Eastern Empire**: see Byzantine Empire
- Eastern Rumelia**, united to Bulgaria, 3222
- Eastern Turkestan**, where it is, 3932
- East India Company**, formed, 3462
- East Indies**, name for India, 7
- East Mark**, the beginning of Austria, 2851
- Eating**, how and when to eat, 3045, 3109  
how to eat and be healthy, 2343
- See also Food**
- Ebonite**, name for vulcanite, 3543
- Ebony**, what it is like, 4998
- Ebro River**, in Spain, 3351
- Ecbatana**, remains of palaces, 5060
- Echidna**, animal, 860, 1000  
dwelling, 5417  
unchanged, 5570  
picture, 861
- Echo**, how it is made, 1057  
what it proves about sound, 4583
- Eclipses**: see Sun and Moon
- Ecuador**, flag, picture in colour, 1640  
scenes in, pictures, 4575  
state of South America, 4574
- Eddy, Mrs. Mary Baker**, founder of Christian Science, 3066
- Eddystone Lighthouse**, 738
- Eden, Garden of**, 3873
- Edenham**, the luck of, legend, 3168
- Edfu**, temple of, 4790
- Edgar**, king of Scotland, 3080
- Edgar the Peaceful**, king of England, 434  
name on charters, 592
- Edgeworth, Lady**, how she saved Castle Lis-sard, 481
- Edgeworth, Maria**, her life, 2592  
pictures, 2593, 2596
- Edict of Nantes**: see Nantes
- Edinburgh**, derivation of name, 5382  
founded by Edwin, 428  
Scott monument, picture, 5013
- Edison, Thomas Alva**, his inventive mind, 4943  
his life, 4318  
improved electric lamp, 658  
improved electric lighting, 658  
invented the phonograph, 3091  
life and work, 4447  
portrait, 4313
- Edmonton**, as fur market, 5154, 5370
- Education**, how it affects the memory, 4794  
how it should begin, 4733  
importance of suiting education to the child, 5284, 5286  
in Canada, 4100  
in France, 2399  
in Germany, 2755  
in United States, 2666
- Edward**, the Black Prince, and Bertrand du Guesclin, 2806  
fought in France, 2704  
started woollen trade in Yorkshire, 752  
won his crest at Cressy, 750
- Edward I.**, king of England, at the battle of Lewes, 600  
called the Hammer of the Scots, 1021  
conquered Wales, 118  
his reign, 747, 2704  
in the Crusades, 1592, 3878  
pictures, 749, 2703  
tried to conquer Scotland, 118
- Edward II.**, king of England, deposed, 748  
gave Newcastle right to sell coal, 800  
how the monks robbed him, 4639  
was murdered, 2704  
with Piers Gaveston, picture, 749
- Edward III.**, king of England, befriended John of Montfort, 2478  
pictures, 749, 2710  
reign, 748  
won lands in France, 2704
- Edward IV.**, king of England, 756
- Edward V.**, king of England, murdered with his brother, 756, 1980, 4638  
pictures, 1981
- Edward VI.**, king of England, 845  
how he saved his sister's life, 3254  
picture, 2705  
trade with Russia in his reign, 3626
- Edward VII.**, king of England, marriage depicted on Denmark monument, 3598  
pictures, 1698, 1705
- Edward the Confessor**, king of England, 434  
built Westminster Abbey, 4635  
his name on charters, 592



# INDEX

- Edward the Confessor**, his successors, 2702  
 portrait, 2710
- Edwards, W.**, built Pontypridd Bridge, 19
- Edwin**, king of England, 428
- Edwin Drood**, Dickens's story, 2436
- Eels**, their habits, 2451  
 various kinds, pictures, 2449, face 200
- Efficiency**, of machinery, 4367
- Egbert**, first king of England, 428, 430  
 stayed at court of Charlemagne, 2064
- Egede, Hans**, life as missionary, 3483  
 pictures, 3483, 3487
- Egg, A. L.**, his picture of Henry Esmond being knighted, 3269
- Egg**, as illustration of equilibrium, 3837  
 bird's eggs: see Birds  
 chicken feeds on the white, 3242  
 Columbus did not set one on end, 5524  
 contains much water, 1172  
 how does Mary get the eggs? problem with picture, 238, 239  
 how to paint brown or pink, 254  
 its value as food, 3217  
 production of eggs in U. S., 2658  
 proportion of water, picture, 1171  
 so-called ants' eggs, really chrysalids, 5524  
 what eggs are made of, 1867  
 what we spend on foreign eggs, 1514  
 why bad eggs float, 1867  
 why eggs are good food, 1574  
 why it breaks less easily when held length-ways, 4600  
 why it gets hard when boiled, 1574
- Egg and fan race**, 252
- Egg hat**, game, 1614
- Egmont, Count Lamoral d'**, story of his death, with picture, 5171
- Egmont**, mountain in New Zealand, 1462
- Egret**, bird, 1954; picture, 1950
- Egypt**, ancient monuments, 5098, 5100  
 became a Roman province, 5286  
 Britain helps to govern, 1765  
 flag, in colour, face 1640  
 flooded by the Nile, 4254  
 how the ancient writings were read, 4782  
 influenced by Greeks, 5124  
 invaded by Napoleon, 2274  
 irrigation of, with pictures, 5399  
 its conquerors, 4788  
 its history, 4256, 4779  
 its position, 281  
 its temples and tombs, 4782, 4786  
 old necklace, 4789  
 old seats, 4789  
 people of Egypt, 4789  
 Persian rule, 5060, 5064, 5065  
 picture of cattle on tomb, 4792  
 the rulers of Egypt, 4785, 4786, 4790  
 war with Assyria, 4980
- Egyptian asp**, a cobra, 1376
- Egyptians**, are small, 2673  
 catching birds, picture, 4790  
 dressing-table, picture, 4788  
 helped Turkey against the Greeks, 3220  
 how they wrote, 3399, 5098  
 loved music, 4607  
 practised sculpture, 4159  
 relics in British Museum, 4782  
 religion and amusements, 4782, 4785, 4787  
 studied astronomy, 1655  
 toys, picture, 4788  
 used the arch in buildings, 620  
 what they knew of Africa, 279  
 worshipped the beetle, 3264  
 worshipped the ibis, 1956  
 writing, picture, 5099  
 wrote on papyrus, 3963
- Egyptian vulture**, with picture, 1844, 1841
- Eider duck**, 1522; picture, 1519
- Idiophone**, how to make, with picture, 5295  
 pictures made by voice, 4072
- Eiffel Tower**, view from, with picture, 5339
- Elaine**, Lily Maid of Astolat, story, 1185  
 picture, 1184
- Elamites**, and their wars, 4974, 4976, 4980
- Eland**, large antelope, 382; picture, 381
- Elastic**, what it means, 1133  
 why does it stretch, 5498
- Elastic gum**, name for india-rubber, 3542
- Elba**, how Napoleon came from Elba, story, and picture, 812  
 Napoleon's place of exile, 2277, 4364
- Elberfeld**, mono-rail, picture, 91
- Elbe River**, in Germany, 2576, 2750
- Elbrus**, Mount, 3750
- Elbrus Mountains**, in Persia, 3932
- Elder**, Mrs. Lilla; see Poetry Index
- Elder**, what it is like, with pictures, 3451  
 what to make from an elder branch, 3070
- Eleanor**, of Aquitaine, wife of Henry II., 594, 2532
- Eleanor**, of Castile, wife of Edward I., her death and monuments, 748  
 saved her husband's life, 747, 2533
- Eleanor**, of Provence, wife of Henry III., 2533
- Electors** of the United States, 1596
- Electric bell**, experiment with air-pump, 4581  
 how it rings, 3237  
 how to fit, with pictures, 2567
- Electric eel**, 98; pictures, 2449, face 200
- Electricity**, aids the growth of plants, 3689  
 best conducted by metals, 1293  
 can disperse fogs, 3090  
 can produce a high temperature, 2082  
 causes thunder, 777  
 chooses the easiest path, 2875  
 discovery and employment of the electric light, 657  
 electric waves, 5176  
 electrical experiments, pictures, 2135, 2136  
 electricity and magnetism, 5253  
 electro-magnet and the work it does, with pictures, 5471  
 how it carries sound along the wire of the telephone, 349  
 how it got its name, 1421  
 how the currents travel through the air, picture, 3531  
 how the electricity of lightning kills, 3688  
 how to make battery, with pictures, 1076  
 how to make it with a lemon, 98  
 made at home, 2135  
 men who found electricity, 2113  
 positive and negative, 1555, 5255
- Electric light**, boy who found electric light, with pictures, 654  
 first made, 657  
 what makes it glow, 3688  
 why a lamp gives out heat, 3377
- Electric ray**, fish, 2448
- Electro-magnets**, 2121  
 the work they perform, with pictures, 5471
- Electrons**, carry electricity, 5255  
 given out by the sun, 2088  
 make up atoms, 1004, 1422  
 their size, 1553, 4828
- Electroscope**, picture, 2136
- Elery**, what it is, 343
- Elements**, made up of atoms, 1193  
 some of the elements, 637, 839  
 the making of the elements, 1419  
 the most important elements, 1289  
 what an element is, 1290, 1372
- Elephant**, derivation of word, 5234  
 education of young, 5483  
 in Africa, 1766  
 intelligence of, 5326  
 its tusks, 2098  
 length of life, 2327, 2328  
 mammoth elephant, picture, 44  
 mastodon elephant, picture, 44  
 pictures, 51, 275  
 skulls of elephants, picture, 3679  
 what kind of animal it is, 272
- Elephant hawk moth**, eggs, caterpillar, and chrysalis, with pictures, 2957
- Elephant tick**, with picture, 3297
- Elers Brothers**, and pottery, 4478
- Elevator**, how it goes up and down, with pictures, 5576  
 invented, 2669
- Eliza Hill**, story, with picture, 4512, 4513
- Elgar, Sir Edward**, composer, 3252
- Elgin, Lord**, as governor, 4100, 4106
- Elgin Marbles**, 620, 4956
- Ellet, George**, life, 2598; portrait, 2593
- Ellet, Sir John**, defended the right of free speech, 1024, 1892; portrait, 1896
- Elizabeth**, empress of Russia, 3630

# INDEX

- Elizabeth**, of England, daughter of Charles I., captivity and death, with picture, 5539
- Elizabeth**, of England, daughter of James I., married Count Frederick, 2528
- Elizabeth**, princess of York, married Henry VII., 2533, 2706
- Elizabeth**, queen of Edward IV., how she found sanctuary, and picture, 4638
- Elizabeth**, queen of England, and Mary Queen of Scots, 3088
- and Sir Walter Raleigh, with picture, 5394
- at Folkestone, story, 1320
- encouraged the Swiss, 2966
- friend of Henry IV. of France, 2070
- helped the Netherlands, 3462
- her reign, 846, 2535
- how her brother saved her life, 3254
- last hours, a picture, 5503
- picture, 840
- relations with Russia, 3628
- sent envoys to Persia, 3580
- the death of a queen, picture, 5502
- what she thought of coal, 800
- Elizabeth**, queen of Roumania, 3220
- Elk**, its size, 382
- Ellerton**, John, wrote hymns, 1997
- Elliott**, Charlotte, wrote hymns, 1998
- Elliott**, Ebenezer, Corn Law rhymers, 1121
- Elmore**, Alfred, his picture, The Tulleries, 4057
- Elm-tree**, 3180; picture, 3180
- Elsie**, the (boat), used in rescue, 3106
- Elves**, the cobbler and the elves, story, and picture, 712
- Elves snowdrop**, 5272
- Elysian Fields**, what they were, 72
- Embattled**, in carpentry, 1618
- Embroidery**, appliqué mantel-border, with pictures, 4996
- English, 5526
- how to embroider a pocket-handkerchief, and pictures, 1507
- how to pad leaves, picture, 1507
- satin stitch, picture, 1507
- Emerald Lake**, picture, 5608
- Emerson**, Ralph Waldo, and the Alcotts, 2047
- author of the Concord Hymn, 2953
- friend of Thoreau, 1484
- his life and teaching, 219, 1478
- pictures, 211, 215
- poems: see Poetry Index
- portrait bust of, a picture, 4843
- what he said of philosophers, 4628
- Emilius**, prince of Hesse Darmstadt, how his men saved him, story, 4010
- Emin Pasha**, rescued by Stanley, 284
- Emma**, Norman wife of Ethelred, 434
- Emmanuel**, king of Portugal, 59
- Emmett**, Daniel Decatur, life of song-writer, 2955
- Emperor**, and the figs, story, 4935
- the emperor's new clothes, story, and pictures in colour, 3641
- the emperor's nightingale, story, 3203
- the foolish emperor and his fowls, story, 2301
- Emperor moth cocoons**, picture, 3895
- Empire Route**, the All-Red Route, 1364
- Empress of China**, the, picture of ship, 5609
- Emu**, bird, 1364, 1428; picture, 1429
- Emulsion**, what it is, 2236
- Enamel**, covers our teeth, 2099
- Enchanted horse**, story, and pictures, 955
- Enchanted thorn**, story, 1677
- Encyclopedia**, brought out in China, 110, 112
- its meaning, 779, 4603
- Ender, E.**, his picture of Shakespeare, 3333
- Endicott**, John, settled at Salem, 518
- Ending**, is change, 5247
- Energy**, conservation of energy, 3469, 4322, 4476
- degradation of energy, 4367
- dissipation of energy, 4368
- how it is wasted, 4366
- its different forms, 3552
- Engine**, how it wastes energy, 4367
- pictures in colour, 289
- problem, with picture, 1090
- some powerful engines, pictures, 301
- the first engines, pictures, 301
- Engineer**, how he thinks, 4942
- Engineering**, damming the Nile, with pictures, 5390
- England**, action in Taiping rebellion, 114
- African possessions, 1765, 4262
- ancient people, 192
- and Trent affair, 2014
- bread famine in, 5644
- captures American ships, 1394, 1396
- captures French fleet in Gulf of St. Lawrence, 3620
- Christianity introduced, 198, 2329
- climate, 1860, 4323
- coming of the Romans, 196
- conquest by the Normans, 436
- denied trade with Europe by Napoleon, 2276
- destruction of the monasteries, 844
- different religious opinions, 516
- famous kings, 2701
- fighting for the crown, 747
- first railroads in, 614
- flag, 2333
- gained a footing in Egypt, 4258
- grew wool for Flemish looms, 3458
- growth of trade, 1028, 1096
- hard times induce colonists to go to America, 513
- helped Greece, 3220
- in Canada, 3621, 3622
- invasion by the Picts and Scots, 200
- Irish driven from Ulster, 1022
- Irish rebellion quelled, 1025
- men who made England great, 1100
- Norman buildings, 591
- once joined to France, 2063
- origin of the name, 427, 4338
- Parliament formed, 600
- progress and reforms, 1096, 1099
- queens, 2532
- religious persecution, 5067
- soil, 3035
- struggles with the Danes, 480
- submission to the pope, 845
- takes Florida, 836
- the beginning of her freedom, 591
- the end of a long struggle, 1093
- the founding of colonies, 1021
- the founding of the nation, 427
- the teaching of the people, 432
- the times of the Stuarts, 1021
- the times of the Tudors, 841
- trade in Victoria's reign, 1098
- trade with Russia, 3628
- undiscovered history, 4115
- union with Ireland, 1096
- union with Scotland, 1021, 1029
- Venezuela boundary dispute, 3538
- war over Canada, 1094, 1247
- war over French possessions, 749, 754
- war over India, 1094, 1704
- war with France in Mary's reign, 2534
- war with Scotland, 748, 846
- war with the Dutch, 1027, 1028, 3463
- wild animals that used to live in England, 192, 996
- Pictures of England**
- how her coasts are defended, 4426
- how it was joined to France, 2072
- how the great commerce of England began, face 191
- See also Battles; British Isles and British Empire; United States; Wars and names of individual wars**
- English**, Dr. Thomas Dunn, author of Ben Bolt, 2957, 3740
- English Channel**, formed, 194
- English Children in the Olden Time**, extract from the book, 5359
- English history**, puzzle pictures, 926
- English language**, how it grew, 4464
- in Elizabeth's time, 94
- made up of many others, 1268
- number of words in it, 2330
- why it has different words for the same thing, 3239
- why it has words from other languages, 3239
- Engarled moth**, picture, 3413
- Enid**, the story of Geraint and Enid, with picture, 1976
- Enns**, town, 2854
- Enterprise**, the, war-ship, and Boxer, 2902
- Envelope**, how to draw and paint, 492
- picture, 493

# INDEX

- Xaver Bey**, Young Turk leader, 3226  
**Epaminondas**, led the Thebans, 1304, 5130  
**Epaphroditus**, master of Epictetus, 2911  
**Epheus**, founded by Ionians, 5124  
**Epic poetry**, what it is, 93  
**Epictetus**, his teaching, 2911  
   saying of, 1271  
**Epidermis**, layer of the skin, 1910  
**Epiglottis**, closes the windpipe, 1635  
**Epimetheus**, companion of Pandora, 5078  
**Equation**, what it is, 1669  
**Equator**, divides Africa, 1765  
   divides the earth, 410, 411, 1750  
   earth's movement at, 5167  
   why it is hot at the Equator, 3034  
**Equilibrium**, different kinds, 3673, 3837  
   shown by tops, picture, 3669  
**Erasmus, Desiderius**, his enthusiasm for Greek, 3156  
   what he said of Amsterdam, 3456  
**Erebus**, an exploring vessel, 4724, 4730  
**Erebus, Mount**, discovered by Ross, 4730  
   picture, face 4719  
**Erech**, ancient city of Mesopotamia, 4974  
**Eric**, who gave his life for his master, 963  
**Ericsson, John**, improved the "Monitor," 2014  
   picture, 2017  
**Ericsson, Lief**, discovers Greenland, 257  
**Erie Canal**, opened, 1826, 3534  
**Erie, Lake**, its position, 1240  
**Esarhaddon**, king of Assyria, 4980  
   picture, 4981  
**Esbjerg**, port of Denmark, 3598  
**Escorial**, building of the, 5498  
   built by Philip II., 3358  
**Eskimo dog**, 500: picture, 503  
**Eskimos**, Captain Hall's book, 4724  
   eat fat, 3239  
   exhibit concerning, 4901  
   hunt the musk-ox, 378  
   pictures, 4719, 4727  
   their way of living, 4720  
   with Peary, 5211  
**Esparto grass**, 888  
**Essen**, where Krupp's factory is, 2752  
**Essences**, their smell, 1572  
**Essex, the**, and Alert, 1398  
   sails around Cape Horn, 2902  
**Estonian girl**, picture, 3747  
**Eteocles**, ruled in Thebes, 468  
**Eternal City**, name given to Rome, 3012  
**Ethelbert**, king of England, 429  
**Ethelred**, king of England, 434  
**Ether**, cannot convey sound, 4581  
   conveys light but not sound, 3977  
   its different waves, 4179, 5173, 5254  
   its effect on the solar system, 2283  
   its specific gravity, 3816  
   light waves in ether, 5042  
   seat of electrical attractions, 5256  
   the cause of our seeing, 5039  
   what happens when it moves, 3466  
   what it is, 2798, 2866  
**Ethers**, related to alcohols, 1873  
**Ethyl alcohol**, is very poisonous, 1872  
**Etiquette**, what the word means, 4603  
**Etna, Mount**, a volcano, 3012, 3229  
**Eton**, founded by Henry VI., 756  
**Etruscans**, attacked by Greeks and Romans, 5261  
   settled in Italy, 5259  
**Ettrick Shepherd**, name given to James Hogg, 701  
**Eucalyptus**, tree, 1364  
**Euclid**, the mathematician, how he argued, 4618;  
   portrait, 4625  
**Euclid of Megara**, a great philosopher, 4618;  
   portrait, 4619  
**Eugene**, prince of Savoy, 2530  
**Euphrates River**, battles fought on its banks, 3152  
   its course, 4571, 4975  
   said to have watered the Garden of Eden, 3873  
**Eurasia**, name of Europe and Asia, 3623  
**Eureka**, its meaning, 3096  
**Europe**, increase of population, 1644  
   spread of Christianity, 2522  
**See also under names of individual countries**  
**Eurytheus**, king of Argolis, 5163  
**Eustace of Boulogne**, 1587  
**Eustache**, his love for his master, 1914  
**Evangeline**, story of, 2461  
**Evaporation**, explained, 5687  
   goes on at all temperatures, 2506  
   what it is, 2235  
**Evening primrose**, 3950  
**Everest, Mount**, 1545; picture, 3693  
**Everlasting pea**, 5274  
**Evolution**, Darwin's theory, 855  
   meaning of word, 5169  
**Ewald, Carl**, wrote fairy tales, 1474  
**Ewing, Mrs.**: see Poetry Index  
**Exciter**, what it is, 2135  
**Excommunication**, what it means, 2526  
**Exercise book**, what to do with, 2487  
**Exhibitions**: see World's Fair  
**Experiments**, feats depending on balance, 5659  
   showing pressure of the air, 4659  
**See also Tricks**  
**Expiration**, what it is, 1637  
**Explorations**, of America, 267  
   of Capt. Bonneville, about the Great Salt Lake, 1830  
   of Capt. Robt. Gray in Oregon, 1396  
   of Coronado in the Southwest, 262  
   of Father Marquette in Illinois, Michigan, etc., 264  
   of Hawaii, 2181  
   of John C. Fremont in the Rocky Mountains, 1830  
   of Lewis and Clark in the Rocky Mountains and beyond, 1396, 3534  
   of Pacific coast of North America, 2177  
   of Peary in the Arctic, 5211  
   of Portugal in Canada, 3617  
   of Simon Fraser in Canada, 5147  
   of the Cabots in Labrador, 3617  
**See also Colonies, Names of Countries, etc.**  
**Explosion**, its cause, 5249  
**Eyam**, attacked by plague, 625  
**Eyes**, cones of the, 2879, 4403, 4404  
   do a horse's eyes magnify? 5381  
   how it sparkles, 5168  
   how pictures are printed on the eyes, 41, 4548  
   how the iris affects the pupil, 4294  
   how the lens works, 4295  
   how to remove dust, 3397  
   how we can preserve our eyes, 4510  
   imperfections of, 5639  
   our pineal eye, 1218, 3976  
   rapid perception of, 5640  
   rods of the eye, 4403, 4404  
   the effect of a blow on the eye, 2798  
   the light in our eyes, 4401  
   the parts of the eye, 4293  
   the retina, 4403  
   the story of, with pictures, 4217, 4213  
   the use of two eyes, 2460  
   walking with eyes shut, 1642  
   what eyes are made of, 3977  
   what happens if blood-vessels are stopped, 1132  
   what spots before the eyes are, 3035, 4401  
   what the pigment-cells do, 4405  
   why eyes are different colours, 4294  
   why onions make it water, 1989  
   why the eyes close during sleep, 1272  
   why the pupil varies in size, 3434  
   why we blink, 2453  
   why we cannot see small things, 2874  
   why we see colours when we shut our eyes, 3435  
**Pictures of the Eyes**  
   eye of a fish, a bird, a man, 4213  
   how eyes grow from the brain, 4507  
   how our eyes deceive us, 104  
   how pictures are printed inside, 41  
   in which the cornea is too convex, 4293  
   in which the cornea is too flat, 4293  
   section of a perfect eye, 4293  
   section of the eyeball, interior of the eyeball, portion of the retina, 4401  
**See also Sight**  
**Eye-bright**, lives on other plants, 3830  
**Eyebrows**, their use, 779, 1962  
**Eyed blenny**, fish, picture, face 200  
**Eyed hawk moth**, picture in colour, face 2982  
**Eyelids**, do not shut out all light, 1266

## INDEX

**Eyelids**, their duties, 4218  
**Byre**, E. J., explorer, 357; picture, 356  
**Byrie**, the eagle's nest, 481

### F

**Faber, Frederick**, hymn-writer, 3427  
**Fable**, what a fable is, 462  
**Fabrizio, Gentile da**, life, 1256, 4948  
 portrait, 4945  
**Fabricius of Acquapendente**, discovered the  
 valves of the veins, 4198  
**Face**, how to draw hundreds of faces, with pic-  
 ture, 5109  
 why fear makes people pale, 3236  
 why it changes, 1267  
 why it is crooked in a mirror, 1572  
 why our face shows our character, 1910  
 why our faces keep warm, 2506  
**Fading**, why things fade, 3235  
**Faerie Queens**, stories from, and pictures, 687  
**Fahrenheit, Gabriel**, invented the thermom-  
 eter, 3864  
**Fahrenheit thermometer**, 2073, 3671  
**Painting**, what happens, 1132, 2453  
**Fairfax, Thomas, Lord**, besieged Knares-  
 borough Castle, 1109  
 his siege of Lathom House, 4718  
**Fairies**, and the hunchback, story, 1106  
 the fairies of St. David, story, 2608  
 the fairy's revenge, story, 1432  
 the wise and foolish fairies, fable, and  
 picture, 4223  
**Fair Maid of Perth, The**, story of the novel,  
 1494  
**Fair Oaks**, battle of, 2016  
**Fairy-books**, the writers of, 1467  
**Fairyfoot**, story, with pictures, 4000  
**Fairyland**, picture in colour, face 332  
**Fairy rings**, and picture, 4595  
**Faithful John**, story, with pictures, 4630  
**Falcon**, 1839, 1846; pictures, 1845  
**Falconer, E.**, wrote song Killarney, 3743  
**Falconet, Etienne Maurice**, sculpture, 4162  
**Falkland, Lucius Carey, Viscount**, became a  
 follower of Charles I., 1888, 1896  
 portrait, 1896  
**Falling bodies**, fall at same speed, 304, 3551  
 gravity increases the rate of falling, 3814  
 how far a stone falls in first second, 3433  
 speed increases as they fall, 3432, 3672  
 why a falling object turns round, 2459  
**Fallow deer**, 382  
**False oat**, picture, 2976

### FAMILIAR THINGS

#### Child's Book of Familiar Things

The following are the actual headings of the chapters in this section; the separate entries appear below, and in their proper places in the index.

a boxful of sunlight, 2357  
 a glass of water, 2101  
 a little talk about pictures, 4585  
 a little talk on sculpture, 4159  
 a piece of rope, 3991  
 a stick of chocolate, 2237  
 a tale of a knife and fork, 4735  
 a talk about trees, 3177, 3439, 3649  
 a walk by the seashore, 1409  
 a walk in an English lane, 3885  
 coal: how we dig up sunshine, 799  
 England's eyes and arms, 4425  
 footpaths in the air, 19  
 how a balloon sails in the sky, 396  
 how a candle is made, 2362  
 how a lighthouse is built, 737  
 how a pair of boots is made, 3102  
 how a pin comes out of the earth, 288  
 how an oyster makes a pearl, 171  
 how buildings are saved from ruin, 3043  
 how men learned to write, 3399  
 how our letters come to us, 3321  
 how the horse's shoe is made, 742  
 how the maps are made, 1749  
 how the tea comes to the table, 88  
 how we get our fish, 3765  
 how we got the piano, 1015  
 how we got the bicycle, 2835  
 how we send a telegram, 3519

**Familiar Things**, making a basket out of wil-  
 lows, 396  
 making a box of matches, 2358  
 making iron and steel, 5537  
 making the desert blossom, 5399  
**Master Jack Frost**, artist, 4891  
 men beneath the waters, 5585  
 riding on wheels of air, 5677  
 some foreign monuments, 5003  
 splendour in the grass, 2575  
 the building of a house, 2557  
 the china on the table, 4477  
 the earth's hidden treasure, 5297  
 the end of the life of a tree, 744  
 the flags of all nations, 1639  
 the grass of the field, 1331  
 the great wonder of a train, 293  
 the house upon the sea, 73  
 the life of a sponge, 1752  
 the life of the earth, 4079  
 the salt of the earth, 223  
 the story of a brick, 3037  
 the story of a fur coat, 2727  
 the story of the clock, 1535  
 the story of the microscope, 2319  
 the story of the umbrella, 3097  
 the wonder of a book, 887  
 the wonder of the telephone, 349  
 the wonderful unseen worker, 5471  
 the world's bread-and-butter, 1143  
 where the fruit comes from, 641  
 where the gas-light comes from, 393  
 where the glass comes from, 1173  
 where the money is made, 536  
 where the nuts come from, 1965  
 where the sugar comes from, 693  
 winter's white diamonds, 2509  
**Family Compact**, a political party, 3901  
**Famine**, Irish, 5464  
 of bread in England, 5644  
**Fancy-dress tea-party**, with pictures, 5194, 5195  
**Fantail pigeons**, 2215; picture, 2213  
**Faraday, Michael**, discovered how to electrify  
 wire, 4314  
 pictures, 2113, 2120  
 story of his life, 2119  
**Farman, Henri**, invented aeroplane, 163  
**Farmer**, and his sacks, a story, 5654  
 and sons, fable, and picture, 2303  
 and stork, fable, and picture, 2929, 4755  
 farmer and dwarf, story, 4798, 5208  
 how did the farmer enlarge the fold? puzzle,  
 4248, 4354  
 went trotting upon his grey mare, poem, in  
 colour, 2813  
**Farne Islands**, lighthouse, picture, 1735  
**Faroe Islands**, belong to Denmark, 3598  
**Farragut, David Glasgow**, captures New Or-  
 leans, 2014  
 picture, 2017  
 statue of, with picture, 4847, 4848  
 takes Mobile, 2019  
**Fatalism**, what is, 5484  
 why is it bad to believe in? 5485  
**Father**, when did you last see your father?  
 story, and picture, 4806  
**Fathers of Confederation**, in Canada, 4102  
**Fat**, difference between fat and oil, 2802  
**Fats**, fuel-foods, 2698  
**Faun**, The Marble Faun, an extract, 5432  
**Faustimus**, who died for his religion, 964  
**Fawkes, Guy**, pictures, 1790, 1791  
 the story of his plot, 1022, 1791  
**Fear**, how it influences deeds, 5132  
 in the dark, 2674  
 of beetles or spiders, 4233  
 of loud noises, 2674  
 why hair stands on end with fright, 4233  
 why it makes our teeth chatter, 4439  
 why it makes people pale, 3236  
 why we cannot control it, 2673  
**Feather**, through microscope, pictures, 2323  
 why it falls to the ground, 3862  
**Feather and fawn**, game, 2572  
**Feather starfish**, 2342; pictures, 2334, 2337  
**Feather-stitching**, 718; picture, 717  
**Februa**, picture, 4516  
 was a Roman feast, 4533, 4516  
**February**, how it got its name, 4515, 4533  
**Federalists**, followers of Hamilton, 1394

# INDEX

- Feeling**, effect on thinking, 5028  
how injured hand recovers feeling, 4749  
loss of feeling after an accident, 4749  
not under our control, 2673  
pleasure, sorrow and tears, 5383
- Felling**, how to do running and felling, 456
- Felspar**, rock, 4246
- Fearis**, wolf-spirit, captured, 85
- Ferdinand**, king of Spain, Columbus asks him for help, 56  
married Isabella of Castile, 2367, 3356  
picture, 57
- Ferdinand III**, king of Castile, his fine character, with picture, 4717
- Ferdinand, Prince**, of Bulgaria, 3222
- Ferguson, Colonel Patrick**, 991, 992, 1822
- Ferments**, produced in the stomach, 2345  
their importance for life, 4052  
what they do, 1872
- Fern**, bears no flowers, 2078  
fern-basket for a nickel, 5665  
hardy ferns, picture, 573  
of long ago, 170  
section under microscope, picture, 2321  
when to plant, 573  
where to grow, 3176
- Fernando, Prince**, of Portugal, 3168
- Ferrar, Robert**, bishop, 5068
- Ferrara, Renee, Duchess of**, how she saved the prince of Conde, 3472
- Ferret**, 140; picture, 137
- Ferris, G. W.**, built a great wheel, 2801
- Fertilisation**, of a flower, 3736  
of plants, 2773, 2778
- Fertilisers**, that enrich the soil, 2254
- Fescue grass**, pictures, 2978, 2979
- Federal system**, in England, 436
- Fibrous-rooted wheat**, picture, 1333
- Field, Cyril West**, and Atlantic cable, 2474; portrait, 2467
- Field, Eugene**: see Poetry Index
- Field cricket**, is harmless, 3141
- Fieldfare**, bird, 2058; picture, 2055
- Fielding, Henry**, 1730; portrait, 1725
- Field mice**, 770
- Field of the Cloth of Gold**, and picture, 840
- Fig**, figs growing, picture in colour, 647  
how the chalcid fly helps it, 3258  
its uses, 642  
where it grows, 647
- Fighting instinct**, its importance, 5133
- Figure-heads**, carved by William Rush, 4841
- Figure of eight knot**, and picture, 235
- Figures**, how to write figures, 3289, 3424  
invented by the Arabs, 3878
- Pigwort**, 4970; picture, 4968
- Fiji Islands**, off Australia, 1466  
pictures, 1463, 1465
- Fiji land crab**, picture, 2580
- Pilbert**, hazel nut, 1965; picture, 1969
- Pile-fish**, its teeth, 210
- Pilipinos**, origin of, 2182
- Pilling the gap**, game, 574
- Pillmore, Millard**, administration, 3536  
picture, 3532
- Filter**, that a boy can make, 5662  
what it does, 5524
- Filtering**, of water, pictures, 2109
- Finch, Francis Miles**: see Poetry Index
- Finch**, 2057; pictures, 2059
- Fingal**, and a Scotch giant, story, 2029
- Finger**, bones of a, picture, 2440  
fingers, pictures, 2543, 2545  
how the fingers are formed, 4343  
why a numb finger cannot feel, 4346  
why they are not the same length, 1986  
why we have ten fingers, 1985
- Finger-nails**, 156, 1986
- Finger-prints**, used to identify burglars, and pictures, 1864
- Finisterre, Cape**, in Galicia, 3353
- Finland**, its history, 3630  
settled in Russia, 3623  
what kind of country it is, 3753
- Finley, Dr. Carlos**, mosquito theory of, 3200
- Finley, John**, 1820
- Finns**, are farmers, 3601  
driven north, 3592
- Florida**, inlets of the sea, 3592
- Fire**, cannot light itself, 3689
- Fire**, child rescued from, a story, 4959  
dying down in a cottage, picture, 3377  
fire inside the earth, picture, 1062  
has helped to shape the earth, 404  
how a draught makes a fire burn, 4117  
how to light a fire, and picture, 4032  
not an element, 939  
not put out by the sun, 1372  
the earliest ways of making, 653; with pictures, 774  
what to do in case of fire, 3067  
why a fire smokes, 3757  
why firelight dances, 4822  
why it goes out, 3377  
why it is hot, 1060, 3758  
why water puts out fire, 1775
- Fire-arms**, improvements in, 2667
- Fire-backed pheasants**, 1515
- Fire-damp**: see Marsh-gas
- Fire fish**, picture, face 200
- Firefly**, lights forest, 3255; with picture, 3255  
lives in warm countries, 53
- Fire on the mountain**, game, 4144
- First aid**, in case of accident, 5110
- First Estate**, nobles of France, 2268
- Fire-tree**, and bramble, fable, and picture, 4274  
the discontented fir-tree, story, and pictures, 3575
- Fish, William**, wrote the Last Will of Charles Lounsbury, 5203
- Fish, Williston**, author, 5203
- Fish**, being landed at Newlyn, picture, 3764  
big fish of sea and river, 2443  
change colour, 2341  
can see and hear, 2880  
common fish of our rivers, picture, 2679  
different kinds, 665  
eyes of, 4217; with picture, 4213  
fish of the rivers and lakes, 2675  
fossil fish, picture, 2888  
have cold blood, 545  
have feeling, 4230  
have no lungs, 362  
how their gills are formed, 3956  
how they breathe, 1081, 2340  
how they can drink sea-water, 4343  
how they developed, 3678  
how they hear, 1867  
how they live in a frozen pond, 4229  
how we get our fish, 3765  
in natural colours, picture, face 200  
in rivers and in the sea, 1272  
of Canada, 5601  
smaller fishes of the sea, 201  
supply in United States, 2658  
that have no eyes, 2682  
the chief facts about fish, 661  
the different kinds in the sea, 2335  
the lowest back-boned animals, 2437  
value as food, 3113, 3217  
what they feed on, 4824  
why they are not salt, 3242  
why they can breathe under water, 3763  
why they cannot live on land, 915  
why they die in a jar of water, 2455  
why they do not drown, 1868  
will not change into anything else, 2454  
with skins like armour, 46, 49
- Fisher, Bishop John**, 3210
- Fisher, Mrs. Clark**, captain of industry, 3066
- Fisher-girl of Picardy**, picture, 2395
- Fisherman's bend**, how to make it, 3283
- Fish-hatcheries**, government, 2658
- Fishing**, drift-net fishing, 3765  
fishing-boats, pictures, 201, 3765  
in Mousehole Harbour, picture, 3764  
seine-net fishing, how it is done, 3765
- Fishing-frog**, the angler-fish, 207
- Fish lizard**, of long ago, 44, 48, 49  
picture, 44, 49
- Fitch, John**, made a steamboat, 2468
- Fitzball, Edward**, wrote My Pretty Jane, 3741
- Fiume**, port of Hungary, 2860
- Five Forks**, battle of, 2022
- Five Nations**, hatred of French aroused, 264  
tribes included in, 17
- Fives**, game, 1614
- Five-shilling piece**, how to make it stand on its edge, trick, 98
- Fixed oils**, 2802

# INDEX

**Fixed stars**, 146, 2609  
**Pixitir**, used for charcoal drawings, 3713  
**Flag**, plant, of different kinds, 5272  
**Flags**, how the British flag was made up, 2333  
 of all nations, 1639; with pictures in colour, 1640  
 how to make a living flag, 4034  
**Flags**, game, 574  
**Flag-wagging**: see Semaphore signalling  
**Flame**, and sound waves, 4918; with picture, 4917  
 how wire gauze affects the flame of a gas-jet, 4319  
 why flames go up, 2233, 3974  
**Flamingo**, 1958; picture, 1959  
**Flamsteed**, John, astronomer, 1662; portrait, 1665  
**Flanders**, earls of, power in Netherlands, 3458  
 English wool was used in, 3458  
 Flemish merchant's house, picture, 3459  
 weavers in England, 752, 3465  
**Flat fish**, 2536; picture, 205  
**Flat-Iron Building**, in New York City, picture, 2663  
**Flavian emperors**, ruled in Rome, 531  
**Flaxman**, John, work as a sculptor, 4162  
**Flea**, good flea and the bad king, story, 5305  
**Fleabane**, blue, picture, 5188  
**Flemish loop knot**, and picture, 236  
**Fletcher**, John, was a poet, 3330  
**Fleur-de-lys**, on compass, 5650  
**Flinders**, Matthew, explorer, 355; portrait, 357  
**Flint**, in cliffs, 5197  
 with pictures, 774  
 with which people made fire, 653  
**Floating**, the law of floating things, 3096  
 why small things move towards large things, 3865  
 why things float, 912, 3096  
**Floating foxtail grass**, picture, 1334  
**Floating sweet grass**, picture, 1339  
**Flodden**, battle of, 846, 3086  
 before and after, picture, 3085  
**Flood**, in France, 2394  
 on the Hwang-ho, 106  
 the flood at Linton Falls, story, and picture, 4829  
**Flora**, Cape, in Franz Josef Land, 4726  
**Florence**, incident concerning dome of cathedral, 5524  
 its history, 3018  
 makes silk and jewellery, 3024  
 on the Arno, 3012  
 was a centre of learning, 3156  
**Pictures of Florence**  
 cathedral, 2781  
 cathedral and Lily Tower, 2787  
 gates of San Giovanni, 2783  
 general view, 2781  
 Santa Maria Novella, walls, 2785  
 street, showing the Uffizi Gallery, 2784  
 window in Giotto's Tower, 2790  
**Florida**, admitted, 3535  
 claims to, 1824  
 conquest of, 260  
 controlled by Spain, 1387  
 discovery of, 268  
 grows flowers and fruit, 643  
 orange-grove, picture, in colour, 643  
 peninsula, 4381  
 purchased, 1825, 3534  
 secedes, 2010, 3536  
 sold by Spain, 3360  
 taken from Spain, 886  
**Florida**, steamer, ran into Republic, 3524  
**Flounder**, colour experiment, 206  
**Flour**, contains little water, 1169  
 how flour is made, 1150  
 Hungarian flour, the finest, 2860  
 its value as a food, 2924  
 making flour and bread, pictures, 1150  
**Flower-box**, making a flower-box for the window, and pictures, 1078  
**Flowering rush**, 4968; picture, 4963  
**Flower-pots**, made from old tin cans, and pictures, 1720  
**Flowers**, all trees have, 2077  
 can see, 2797  
 colouring matter of red flowers, 4118  
 die in winter, 426  
 do not feel pain, 4337

**Flowers**, everlasting flowers, 1509  
 fertilised by bees, 2826  
 flowers frozen in liquid air, picture, 4051  
 garden flowers, picture, in colour, 3729  
 get fresh supply of honey, 4826  
 habits of flowers, 3949  
 how a flower is born, 3731  
 how they get their colour, 4442  
 how they got their names, 5115  
 how they resist cold, 3094  
 how to arrange for the house, 578  
 how to keep cut flowers, 1279  
 how to preserve real flowers, 3511  
 how to prevent plants flowering, 1074  
 little stories about flowers, 190, 1677  
 making simple patterns with, 3374  
 of British authors, 4609  
 of the garden, 5269  
 of the seashore, 5185  
 of the stream, 4961  
 once all wild, 911  
 sleeping with flowers in the room, 1370  
 their scent, 38, 1860  
 their sleep, 1265  
 to make paper flowers, and pictures, 4140  
 what they must have to grow, 4337  
 why do they droop in a heated room, 5641  
 why petals are not green, 4118  
 why the sun does not fade them, 4548  
 why they vary in colour, 3089  
 why they were made, 2075  
 wild flowers, picture, in colour, 3728  
**See also Plants and Separate Names**  
**Flowers of the Forest**, The, written about  
 Flodden, 3086  
**Flower-stand**, rustic, how to make, and pictures, 4349  
**Flower-vase**, how to make, of reels, 4352  
**Fluid pressure**, how to prove the equality of, 3948  
 same in all directions, 3946  
**Fluorine**, gaseous element, 1290  
**Flushing**, port of Holland, 3456  
**Fly**, is produced from eggs, 43  
 its hearing, 5021  
 its life-story, 3144  
 its sight, 5020  
 its strength, 4231  
 pictures, 2323, 2326, 3257  
**Fly-catcher**, lives on flies, 2218  
**Flying**, how men learn to fly, and pictures, 161  
 why we cannot fly, 2674  
**Flying dragon**, a lizard, 49, 1220  
**Flying-fish**, its battle for life, in colour, face  
 200  
 picture, in colour, 51  
 what kind of fish it is, 207  
**Flying fox**, 766; picture, 767  
**Flying gecko**, 1220  
**Flying lemur**, with picture, 767, 768  
**Flying machines**, kinds of, and pictures, 161  
 the difficulty of making, 3838  
**See also Balloon and Aeroplane**  
**Flying phalanger**, 767  
**Flying squirrel**, 767, 768  
**Fly-orchis**, description, 4423  
 picture, 4423  
**Fly the garter**, game, 3920  
**Foam**, why it is white, 1133  
**Focus**, what it is, 2880  
**Fog**, how fogs are caused, 918  
 what causes fog to disperse, 3090  
 why fog deadens sound, 3973  
**Fold**, how did the farmer enlarge the fold?  
 puzzle, 4248, 4354  
**Folk-song**, what folk-songs are, 3027  
**Folkstone**, fool on the stool, tale, 1320  
**Follen**, Eliza: see Poetry Index  
**Follow my leader**, game, 574  
**Fomentation**, how to apply, 3397  
**Fondants**, how to make, 3512  
**Food**, and its uses, 2695  
 how and when to eat, 3045  
 how animals use their food, 3236  
 how much food we require, 2700  
 how our food is digested, 2343  
 how some animals can do without, 2456  
 how the diet of animals differs, 3045  
 Nature's wonderful food, 2791



# INDEX

- Food**, passages in the mouth and throat, picture, 1635  
the different values of, picture, 2695  
the real value of foods, 3109  
the value of meat as food, 3213  
what the first living things ate, 4114  
why it is cooked, 1656  
why its price varies, 5248  
why we have different tastes, 3238  
world's food supply, 1644
- Fool**, how did the king's jester escape from prison? and picture, 2384, 2139  
why fools were employed by kings, 4278
- Fool's palsy**, description, 4288  
picture, 4286
- Foot**, bones, picture, 2545  
how the foot is formed, 2546  
used as hand by ivory-workers, 4257  
why our feet do not wear away, 2456
- Foots**, Commodore, at Fort Henry, 2013
- Foraminifera**, form chalk cliffs, 2335
- Forbidden room**, story, 1671
- Forced vibration**, 4914
- Ford**, Edward Onslow, his statue of General Gordon, 4170  
in the Arctic, 5212  
sculptor, 4162
- Forearm**, part of the arm, 2545, 3427
- Foreign language**, difficulty of, 4077
- Foreign words and phrases**, 5698
- Forel**, Dr., and dragon-flies, 4216  
studied bees, 780
- Forests**, Canadian, and their wealth, with pictures, 5429, 5691  
conservation in Canada, 5430  
deserts and forests, 3071  
destruction of, in America, 2657  
fire protection of, 5430  
forest which has turned to stone, 3073  
how forests were buried, 2798  
of British Columbia, 5610  
of the New World, picture, 3075  
of the Old World, picture, 3074  
petrified, of Arizona, 3589  
picture, 408  
so-called deer-forests not forests, 5524  
the source of life, 3073  
what happens when destroyed, 3076
- See also Trees**
- Forfarshire**, the, wrecked, 1733
- forfeit-in-the-ring**, game of, 4144
- Forfeits**, and how to pay them, 5104
- Forget-me-not**, its story, 190  
what it is like, 4970  
when to plant it, 1716, 3278
- Fork**, for digging and planting, 233  
how it came into use, 4735  
how it is made, pictures, 4739
- Forks and spoons**, picture, 4735
- Fork-tailed petrel**, where it lives, 1626
- Formalin**, used to preserve things, 1873
- Formic acid**, in bodies of ants, 780, 2943
- Formicarium**, how to make one, and picture, 3916
- Formosa**, island, 363
- Formula**, what it means, 1667
- Forster**, George, accompanied Captain Cook, 853
- Fort Carolina**, in Florida, 262
- Fort Chippewyan**, its fur trade, and picture, 2728
- Fort Dearborn**, on the site of Chicago, 5513
- Fort Donelson**, captured, 2013
- Fort Duquesne**, battle of, 884, 885  
built, 882
- Fort Fisher**, captured, 2019
- Fort Frontenac**, battle of, 885  
built on site of Kingston, 3621
- Fort Garry**, in Riel Rebellion, 4104  
settled, 5366
- Fort Bridge**, as seen by engine-driver, picture, 25  
how it was built, 20  
pictures, 19, 23
- Fort Henry**, captured, 2013
- Ft. McHenry**, Star-spangled Banner written during bombardment of, 2955
- Fort Necessity**, 882
- Fort Pitt**, erected on site of Pittsburg, 885
- Fort St. Louis**, built, 266
- Fort Sumter**, captured, 2012, 3536  
declines to surrender, 2010  
fired on, 2012  
garrison firing, picture, 2023
- Fort Ticonderoga**, battles of, 984, 1830
- Fortunes of Nigel**, the, story, 1495
- Fortune telling**, by character, 5261
- Fort Washington**, battle of, 986
- Fort William Henry**, captured, 884, 3622
- Forum**, in Rome, 3015, 5261, 5268
- Fossil fish**, picture, 2388
- Fossils**, in National History Museums, 4904  
how they are formed, 2886  
how to make a collection, 4246  
what the name means, 2885  
where they are found, 2883
- Forster**, Stephen Collins, author of negro melodies, life, 2364  
poems: see Poetry Index
- Fountain**, why water rises, with picture, 679
- Fountain-pen**, how to clean one, 4456
- Fowl and jewel**, fable, and picture, 560
- Fowler**, Sir John, built the Forth Bridge, 20
- Fowls**, come from wild birds, 1513  
drinking fountain, picture, 4672  
house, picture, 4671  
how to choose them, 4671, 4672
- Fox**, Charles James, and slavery, 1100  
how he governed the country, 2384  
portrait, 2379
- Fox**, George, imprisonment, 1320
- Fox**, Gilbert, sang Hall Columbia for the first time, 2956
- Fox**, adventures of Reynard the fox, a story, 5310  
and the bear, a story, 1063  
changes its coat in winter, 1777  
communication between foxes, 5325  
dwelling, 5414, 5416  
fox and bear, fable, and picture, 3852  
fox and chickens, game, 4144  
fox and grapes, fable, and picture, 560  
fox and his wife, picture, in colour, face 500  
fox and the crow, fable, 463  
fox and the faithful horse, story, 967  
fox and the frog, fable, 4008  
fox and the goat, fable, 3310, 5238  
fox and the lion, fable, 3310, 5238  
fox and the mask, and picture, 2308  
fox and wolf, fable, and picture, 2378  
fox in the hole, game, 3920  
fox in the well, fable, 463  
fox, picture, in colour, 134  
fox repaid in his own coin, Canterbury Tale, 438  
hungry fox and the kitten, story, 1525  
pelts of, 4820  
what kind of animal it is, 141
- Foxglove**, description, 4616  
gives nectar only to bee, 3736  
pictures, 3827, 4613
- Foxtail grasses**, pictures, 1334, 2977
- Fracture**, green stick fracture, 2439  
how to treat, 5130
- Fram**, exploring vessel, 4726
- France**, American trouble with, 3533  
as it is to-day, 2391  
assists America, 992  
became an empire, 2276  
boy who died for the Republic, 5512  
captures American ships, 1394, 1396  
civil war began, 2277  
colonies, 2400, 4261  
defeat at Cape St. Vincent, 3358  
disputes about Canada, 1094, 1247  
flag, 1640  
French revolutionists, 4063  
government, 2399  
helped Greece, 3220  
history to the Revolution, 2063  
in Canada, 3617  
in the New World, 880  
in the Revolution, 2267  
industries, 2396  
interference in Mexico, 4390  
interferes with treaty arrangements, 1387  
its climate, 2392  
loses American territory, 886  
National Assembly's power, 2268  
National Guard formed, 2270, 4066

# INDEX

**France**, nicknames of kings, 2065  
 population, 1644  
 rivers and canals, 2394  
 saved by Joan of Arc, 120  
 sculpture revived, 4161  
 Spain occupied, 3360  
 takes Calais, 2535  
 took Alsace and Lorraine, 2528  
 towns and people, 2398  
 war about India, 1094, 1704  
 war over Spanish Succession, 1029  
 war with Russia, 3631

## Pictures

army entering Mexico, picture, 4385  
 army marching against the Germans, picture, 2582  
 flag, picture in colour, 1640  
 maps, 2063, 2072, 2390  
 flight from Vittoria, picture, 3355

## See also France, the

**Francis II.**, emperor of Austria, 2530  
**Francis I.**, king of France, encouraged art, 4161  
 knighted by Bayard, 129  
 held gay courts, 2068  
**Francis II.**, king of France, 2068  
**Francis Joseph I.**, emperor of Austria, and  
 portrait, 2851, 2856  
**Francis Joseph II.**, emperor of Germany, met  
 Catherine II. of Russia, 3631  
**Francis Joseph glacier**, picture, 1461  
**Francis, King**, story of, 5348  
**Francis of Assisi**, among the birds, picture, 1006  
 his death, picture, 4588  
 story of his life, 1007  
**Franco-German War**, 2277, 2580  
**Franklin, Benjamin**, and the constitution, 1389,  
 1390  
 appeals to France, 2898  
 as inventor, 2667  
 experimenting with a kite, picture, 2117  
 portrait bust of, 4842  
 portraits, 987, 2113  
 story of his life, 2116  
 studied electricity, 1475, 2135  
**Franklin, Sir John**, his exploring expeditions,  
 4724  
 portrait, 4725  
**Franklin**, district of, 4106  
**Franklin**, state of, 1822  
**Franks**, besieged Paris, 2317  
 conquered the Alemanni, 2964  
 invaded Gaul, 2064  
 invaded the Netherlands, 3457  
**Franz Joseph Land**, expedition, 4724  
**Fraser, Simon**, explorations of, 5147  
**Fraser River**, discovered, 5147  
 in British Columbia, 1244  
 picture, 5609  
**Freebies**, what they are, 3974  
**Freda** in the Giant's Plaything, 5341  
**Frederick VII.**, king of Denmark, gave Den-  
 mark a constitution, 3596  
 statue in Copenhagen, 3598  
**Frederick I., Barbarossa**, German emperor,  
 death, 1590  
 did homage to the pope, 3014  
 Frederick of the Red Beard, in the Crusades,  
 3878  
 presented a candlestick to Aix-la-Chapelle  
 Cathedral, 2752  
 proclaimed king, picture, 2525  
 story of his life, 2526  
**Frederick I.**, of Prussia, visiting a school, pic-  
 ture, 2529  
**Frederick II.**, German emperor, 1592  
**Frederick II., the Great**, his work for his king-  
 dom, 2530  
 on his travels, picture, 2529  
 Peter III. made peace with him, 3630  
 story of him and a horse, 4273  
 took part of Poland, 2578  
 visited by Bach, 3244  
**Frederick, Count**, led the Protestants in Ger-  
 many, 2528  
**Frederick William**, elector of Brandenburg,  
 supported German emperor, 2530  
**Freeman, Mrs. Mary Wilkins**, picture, 2043  
 sketch of work, 2060  
**Freesias**, how to treat them, 1610

**Freestone**, used for building, 5197  
**Free vibration**, 4914  
**Freibourg**, dates from twelfth century, 2964  
**Fremont, John C.**, carried most of northern  
 states in 1856, 2009  
 explorations of, 1830  
**French, Daniel Chester**, sculpture of, with  
 pictures, 4843, 4845, 4846  
**French, the**, as fur-traders, 5174  
 expedition to destroy Hudson's Bay Co.'s  
 posts, 5148  
**French and American**, game, 5113  
**French and Indian War**, 979  
 See also France

**French Language**, Æsop's fables, 4278, 4755, 5238,  
 little picture-stories in French, 256, 494, 735,  
 974, 1214, 1455, 1695, 1936, 2176, 2416, 2655, 2896, 3136,  
 3294, 3376, 3498, 3509, 3714, 3788, 4040, 4096, 4241,  
 4304, 4468, 5392  
 comment Gotham acquit une mauvaise répu-  
 tation, 4705  
 founded on Latin, 2066  
 la chatte et le perroquet, 4911  
 la jeune fée du Lac Van, 4130  
 la plus sage fille du Wessex, 4007  
 les enfants dans la forêt, 5056  
 le loup dans la nuit, 5120  
 le malin fermier et le nain, 5210  
 le roi, le noble et le paysan, 4008  
 les oies qui gardaient Rome, 3855  
 object lesson, picture, 5111  
 spoken by upper classes in Russia, 3746  
 things in school-room, picture, 4884  
**French marigold**, 719  
**French nursery rhymes**: see Poetry Index  
**French ranunculi**, 1716  
**French Revolution**, 1095, 2267, 4053, 4062

## Pictures

attack on the Tuilleries, 4057  
 Charlotte Corday arrested, 4061  
 denunciation of Robespierre, 4061  
 destruction of the Bastille, 4055  
 gaoler reading names of prisoners, 2271  
 Girondins going to the scaffold, 4059  
 Madame Roland in prison, 4059  
 oath in the tennis-court, 4055  
 Parisians marching to Versailles, 2269  
 royal family captured by the mob, 4057  
 royal family in prison: Marie Antoinette's  
 trial, 4058  
 victims on their way to execution, 2271  
**French seams**, how to do them, 456  
**French silk weavers**, in England, 1028  
**Fresco**, what a fresco is, 4586  
**Fresh air**, how necessary it is, 906  
**Fretwork bracket**, with pictures, 5293  
**Frogs**, gave us the name Friday, 87  
 goddess of peace, 428  
 picture, 86  
**Friction**, helps to stop a wheel, 683  
 helps us to walk, 3694  
 how friction causes heat, 2508, 3094  
 what it is, 773  
**Friday**, how the day was named, 87, 428  
 what the name means, 4533  
**Friedland**, battle of, 2276  
**Friesland**, state in the Netherlands, 3458  
**Frig**, Saxon goddess, 4533  
**Frigate bird**, and picture, 1630, 1631  
**Friiled lizard**, with picture, 1220, 1227  
**Fringed gecko**, 1227  
**Frisians**, invaded the Netherlands, 3457  
**Frith, John**, put to death, 5067  
**Fritillaries**, butterflies, 2992  
**Fritillary**, plant: see Snake's head  
**Frobisher, Sir Martin**, exploration of, 267  
 explorer, 2535  
 portrait, 4725  
 tried to reach North Pole, 4722  
**Frog**, breathes greatly by its skin, 1963  
 frogs and bulls, fable, and picture, 4904  
 frogs and toads, pictures in colour, 1228  
 how did the frogs jump on the tumblers?  
 and picture, 1609, 1619  
 how it hears, 155  
 how it is formed, 2438  
 how to draw a frog from circles, and pic-  
 tures, 1619  
 intelligence and communication of, 5323  
 more often seen in wet weather, 155

# INDEX

**Frog**, prolonged life of nerve of frog, 2623  
shows no fear, 3415  
the frog that became a prince, story, and pictures, 1316, 1317  
the frogs who wanted a king, fable, and pictures, 462  
the life history of a frog, 662, 1223  
the proud frog, fable, and picture, 877  
**Frog-bit**, plant, 4962  
**Frog-spit**, name for the froth-fly, 3139  
**Froissart**, Jean, writer, 752  
**Frolic**, the, and Wasp, 1398, 2902  
**Frost**, beautifies things, and picture, 2510  
how it affects water, 3694, 4646  
Jack Frost, artist, pictures, 4891-99  
makes water-pipes burst, 3694  
sweetens the soil, 2124  
**Frosted glass**, lets light through, 1286  
**Froth-fly**, life-story, 3139  
**Fruit**, admitted duty-free by mistake, 5668  
American fruits, picture, in colour, 661  
contains many salts, 2698  
how fruits with stones are formed, 2076  
how to keep fruit fresh, 3826  
ripe and unripe fruits, 4748  
the world on a table, story, 5306  
when to gather fruit, 4354  
where the fruit comes from, 641  
**Fruit bat**, 766; picture, 767  
**Fruit-trees**, how to plant them, 4462  
**Fry**, Elizabeth, her life, and picture, 1297  
**Fuchs**, Leonhard, botanist, 5277  
**Fuchsia**, a South American plant, 5271  
how to harden it, 573  
how to treat fuchsia cuttings, 1350  
in garden, 5271  
pictures, 5277  
**Fuero**, volcano, and picture, 4390  
**Fuel**, what may be used as fuel, 4032  
**Fuel-foods**, give us heat and power, 2698  
**Fuentes d'Onoro**, battle of, 4364  
**Fugitive Slave Law**, and its workings, 2008  
passed, 3536  
**Fuji-yama**, description, 5558  
mountain, 370  
**Fulk of Anjou**, reigned over the Latin kingdom, 1589  
**Fuller**, George, art of, 4152  
**Fulton**, Robert, and Napoleon, picture, 2471  
and the Clermont, 1398  
as inventor, 2667, 3534  
his steamboat, picture, 2469  
life, 3468; portrait, 2467  
**Fundy**, Bay of, picture, 2466  
**Funeral**, why a man's horse follows, 5650  
**Fungus**, contains no green matter, 4595  
how fairy rings are made, 4595  
pictures, 3832, 4595  
**Funny-bone**, what it is, 2627, 3561  
**Fur**, animals that bear, and method of obtaining, 4817  
early fur trade in Canada, 3619  
important export of Alaska, 2179  
story of a fur-coat, 2727  
traders and trappers of Canada, with pictures, 5147  
where fur comes from, and pictures, 2728  
**Furnaces**, open-hearth blast and puddling, 5539  
**Furniture**, how to know the woods in furniture, 4998  
why it cracks at night, 4750  
**Further India**, how it is made up, 1890  
people threshing rice, picture, 1574  
**Furze**, its family, and picture, 4108, 4111  
**Fusel oil**, found in whisky, 1872  
**Fust**, John, lent Gutenberg money, 3569  
**Future**, is it possible to know the, 5484

## G

**Gadsden Purchase**, territory bought from Mexico, 3538  
**Gainsborough**, Thomas, his picture, A Girl, 763; portrait, 759  
painter, 764, 4587  
**Galahad**, Sir, 871; picture, 873  
**Galates**, the statue Pygmalion carved, 963  
**Galba**, rebelled against Nero, 530  
**Gale**, where to rest in a gale, 4032

**Galen**, discovered blood in artery, 1579  
his life, 4197; portrait, 4195  
**Gallcia**, province of Austria, 2852  
**Gallcia**, province of Spain, 3353  
**Gallies**, Lake of, in Palestine, 3874  
**Galileo**, a famous astronomer, 147  
discovered phases of Venus, 2424, 2800  
discovered sun-spots, 2083  
discoveries about motion, 3549  
experiment with weights, 304, 3433, 3551  
first saw Saturn's rings, 2429  
his life, 1658; with picture, 1659  
invented the telescope, 1943  
made the first thermometer, 4371  
weight and gravity, discoveries, 3551  
**Gallandet Group**, a sculptured group, 4896  
**Gall-fly**, its egg, 2460  
**Galton**, Sir Francis, experiment with notes on animals, 4760  
**Galvani**, Luigi, experiments with electricity, 2118; portrait, 2113  
**Gama**, Vasco da, his explorations, 59, 290, 4258; portrait, 59  
**"Game Cook"**, nickname of Thomas Sumter, 990  
**Games**, adjective letter, 5196  
amusement with stops and commas, 5663  
anagram making, 5002  
balloon-breaking, 4242  
baste the bear, 1072  
battledore and shuttlecock, 3516  
bingo, 2572  
blackthorn, 1072  
blindfold games, 5000  
blindman's buff, 2571  
blind partners, 5000  
bounce about, 1072  
bowls, 1072  
bows and arrows, 3516  
bridge-board, 2572  
buff with a wand, 5000  
bundle of rags, 4144  
bung the bucket, 1072  
buttercups and bees, 3516  
bux, 237  
capping verses, 5113  
catch-ball, 1614  
catch the salmon, 1072  
Christmas charade, 2253  
clumps, 2137  
conquers, 1072  
consequences, 2137  
coriscrown, 5113  
croquet, 4451  
cross-ball, 1614  
cudgel, 3614  
Dicky, show a light, 1072, 3516  
dominoes, 4030  
draughts, 4460, 4672  
drawing a pig, 5000  
driving match, 2252  
duck under the water, 2571  
easy games with playing cards, 4885  
egg and fan race, 2252  
egg hat, 1614  
feather and fans, 2572  
field golf, 724  
filling the gap, 574  
fire on the mountain, 4144  
fives, 1614  
flags, 574  
fly the garter, 3920  
follow my leader, 574  
forfeit-in-the-ring, 4144  
forfeits, and how to pay them, 5104  
fox and chickens, 4144  
fox in the hole, 3920  
French and American, 5113  
garden gate, 2571  
garden quoits, 3614  
general post, 2573  
genteel lady, 2573  
golf, 3169  
goose march, 2572  
guard the block, 3614  
hay-games, 4136  
hide and seek on the hearthrug, 237  
hockey, 4993  
hold fast! let go! 2571  
hoop parade, 4027  
hoop race, 4027  
hop, skip, and a jump, 3614

# INDEX

- Games**, house paper-chase, 2725  
how many miles to Babylon? 4144  
how, when, and where? 237  
hunt the ring, 2571  
hunt the slipper, 2571  
hunt the stag, 4027  
I love my love, 237  
in the colonies, 944  
I spy, 574  
jingling, 5000  
jolly miller, 3614  
lawn-tennis, 4347  
leap-frog, 724  
leaping-pole, 3614  
living waxworks, 5290  
magic answers, 2137  
marbles, 5106  
making rhymes, 5448  
menagerie race, 4500  
motor race, 4242  
moving figures with the hand, 5103  
nine holes, 1614  
noughts and crosses, 5113  
object game, 2573  
obstacle race, 3614  
old maid, 4886  
oranges and lemons, 4144, 5196  
outlines, 5113  
of verses made with figures and letters, 5661  
of what is it? 5457  
pee ku, 3920  
picking plums, 5106  
pitchstone, 5106  
posting, 4027  
posture, 1614  
prisoner's base, 3920  
proverbs, 2137, 5202  
puss in the corner, 2571  
putting on the donkey's tail, 5000  
puzzle-picture of, 5458  
pyramids, 5106  
race with clothes-basket, 2253  
Red Indian race, 4242  
rhymes, 237  
ring-taw, 5106  
rounders, 5289  
round tag, 574  
Russian gossip, 237  
sack race, 724  
schoolmistress, 2573  
Simon says, 2137  
sixpenny telegrams, 2573  
slate and pencil games, 5113  
snap, 4672  
snap-snap-snorum, 4886  
soap-bubbles, 3516  
spade the gardener, 4886  
spelling bee, 237  
spoons, 5000  
stand-up megs, 5106  
steeplechase, 724  
stick and ring, 3516  
stool-ball, 4029  
the serpent, 5106  
throwing light, 2573  
throwing the baseball, 1614  
tip-cat, 724  
tit tat toe, 2572  
Tom Tiddler's ground, 724  
to play on the beach, with pictures, 5527  
touch, 574  
trap-ball, 1614  
traveller and the wolves, 724  
tug of war, 724  
turnspikes, 4027  
up to London, 5113  
warning, 574  
what is it? 2490, 2570  
what is wrong? 5292  
wheelbarrow race, 4242  
where is it? 2356  
why is it? 2570, 2686  
winks, 2573  
wolf, 2572  
word-making, 2137  
you mustn't laugh! 2573  
zoo-guess, 2138
- Ganges River**, in India, 1545, 1546  
pilgrims bathing, picture, 1549
- Gannet**, bird, 1632; picture, 1631
- Ganoids**, fishes, 3678
- Garden**, flower garden, in April, 233, 572; in May, 719, 830; in June, 927, 1074; in July, 1203, 1279; in August, 1350, 1509; in September, 1610, 1716; in October, 1816, 1817; in November, 1928, 2042; in December, 2134, 2254  
how did the father divide his garden? puzzle, and pictures, 2489, 2565  
how to plant out, with picture, 830, 3278, 3616  
how to pot plants, 3826  
indoor garden without soil, 2564  
necessary tools for gardening, and pictures, 223  
school children learning gardening in Western Australia, pictures, 1363  
thinning out of plants, 573  
vegetable garden in March, 2971; in April, 3176; in May, 3278, 3398; in June, 3514, 3616; in July, 3726, 3826; in the middle of August, 3922; in the middle of September, 4353; at the end of October, 4462
- See also Plants**
- Garden cave**, and pictures, 5001
- Garden cities**, what they are, 2874
- Garden gate**, game, 2571
- "Garden of the Gulf"**, nickname of Prince Edward Island, 5604
- Garden of the Loves**, picture, 4590
- Garden party games**, 4242
- Garden quoits**, how to play, 3614
- Garden seat**, and picture, 3173
- Garden spider**, picture, 3299
- Gardiner, Allen**, missionary, 3486; picture, 3487
- Garfield, James A.**, assassination, 2417, 3537  
picture, 3532
- Garibaldi, Giuseppe**, patriot, 124, 3024  
picture, 126
- Garonne, river**, in France, 2394
- Garrick, David**, couplet on Goldsmith, 1732  
Garrick at Reynolds' house, picture, 213  
his connection with Johnson, 4678  
wrote Hearts of Oak, 3738
- Garrison, Theodosia**: see Poetry Index
- Garrison, William Lloyd**, as anti-slavery leader, 2009
- Gary, Elasco de**, said to have made a steam-boat, 2468
- Gas**, becomes liquid when cooled, 311  
Boyle's law about pressure, 3948  
can be liquefied by liquid air, 4050  
compressible, 3948  
diffusion of gases, 3090, 4442  
gases known in science as fluids, 3941  
has no cohesion, 618  
how the word was made, 4603  
in stars, 2719  
kinetic theory of gases, 3467  
lighter than air, 397  
meteors turn into gas, 2500  
specific gravity of gases, 3816  
the same as vapour, 3384  
the sun a mass of gas, 2082  
the use of hot gases rising, 2233  
three wonderful gases, 1193
- Gas, coal**, how our gas is made, and pictures, 393, 394  
different colours in flame, 1860  
effect of wire gauze on flame, 4319  
how it was discovered, 655  
utilisation of coal-gas, 655  
why shade hung over gas moves, 4599
- Gas, natural**, 2661  
in Canada, 5600
- Gascoigne**, chief justice, and Prince Henry, story, and picture, 4830
- Gaseous stars**, what they are, 2719
- Gaskell, Mrs.**, life, 2595; portrait, 2593
- Gasolene**, cleans material, 4456
- Gasometer**, how it stores gas, 393
- Gate**, names that come from it, 4907
- Gate of Lions**, 5004; picture, 5008
- Gates, Horatio**, defeated, 990  
got credit of Saratoga victory, 988  
in Revolution, 984
- Gathering**, in needlework, 457, 835
- Gattamelata monument**, picture, 4164
- Gauchos branding an ox**, picture, 4567
- Gaugamata**, battle of, 5061
- Gaul**, country, 420, 2063, 2329

# INDEX

**Gauls**, attacked Rome, 554, 5262  
**Gautama**, Buddha's real name, 2995  
**Gautier, Theophile**, story of his cat, 2494  
**Gaveston, Piers**, picture, 749  
**Gavial**, a kind of crocodile, 1221  
**Gay, John**: see Poetry Index  
**Gebel-tarik**, led the Saracens, 3353  
**Gecko**, a lizard, 1219; pictures, 1220, 1227  
**Geese**, who guarded Rome, story, 554  
**Gairanger Fiord**, picture, 3599  
**Geleert**, the faithful dog, story, 5208  
**General post**, game, 2573  
**Geneva**, war meeting held, 2968  
**Geneva, Lake of**, its size, 2960  
**Geneviève, St.**, her life, 2317  
   scenes in her life, pictures, 2317, 2318  
**Genghis Khan**, led the Mongols, 3878  
**Genoa**, its docks, 3024; with picture, 3023  
   its history, 3016, 3154  
**Gentian lady**, game, 2573  
**Gentian**, dwarf, 1816  
   family of plants, 4112  
   fringed, 5036; with picture, 5034  
**Geoffrey**, of Anjou, count, 2532  
**Geology**, derivation of word, 2234  
   of America, 9  
   the earth's changing face, 3003  
   the earth's crumbling crust, 2881  
   what faults are, 2828  
   **See also Fossils**  
**Geophilus**, centipede, picture, 3297  
**George I.**, king of England, 1093  
   nephew of Prince Rupert, 1895  
   portrait, 2710  
   tried to arrest Lady Nithsdale, 2203  
   why he was made king, 2540, 2710  
**George II.**, king of England, 1094  
   portrait, 2710  
   power of England in his reign, 2710  
**George III.**, king of England, 1094  
   his watch, picture, 5165  
   review of volunteers, picture, 2709  
   what kind of king he was, 2710  
**George IV.**, king of England, 1095  
**George I.**, king of Greece, 3598  
**George, Black**, Servian leader, 3222  
**George, St.**, and the dragon, story, and picture, 960  
   cross, 123, 1935; pictures, 1213, 1935  
   statue, picture, 4167  
   story of flag of St. George, 2333  
   St. George and the dragon, picture, 961  
**Georgia**, colony of, 524  
   secedes, 2010, 3536  
**Georgia**, kingdom of Asia, 3631, 3878  
**Geraint and Enid**, story, and pictures, 1977  
**Geranium**, cultivation, 573, 830  
   description, 5270  
   how to treat cuttings, 1350  
   likes to be fairly dry, 1074, 2254, 3514  
   meaning of name, 5116  
   pictures, 5275  
   the geranium family, 4111, 5270  
**Germ**, is a microbe, 781  
**German dwarf**, entertainment, 2249  
**German East Africa**, where it is, 4262  
**Germanicus**, a famous soldier, 529  
**German iris**, 5272  
**German silver**, what it is, 1870  
**Germantown**, battle of, 988  
**German tribes**, in Iberian Peninsula, 3352  
   in Switzerland, 2962  
**Germanus**, Bishop and Geneviève, 2317  
**Germany**, army, 2748  
   as it is to-day, 2747  
   care of children, 5284  
   folk-songs in English verse, 3027  
   its flag, face 1640  
   national song, 2756  
   navy and trade, 2750  
   people and education, 2755  
   population increases, 1644  
   possessions in Africa, 2756, 4262  
   Reichstag formed, 2580  
   the beginnings of Germany, 2521  
   the making of Germany, 2575  
   the Peasants' War, 2527  
   united under king of Prussia, 1640, 2277, 2581

## Pictures of Germany

arms of Germany, 2521  
 children's open-air life, 2753  
 flag in colour, face, 1640  
 Germans as hunters, 2520  
 growth of empire, 2514  
 village in olden times, 2520  
**Gesner, Dr. Abraham**, obtained and named  
   kerosene, 4131  
**Gessler**, how he treated William Tell, 1674  
**Gettysburg**, battle of, 2016  
**Geyser**, in Yellowstone Park, 587; picture, 4441  
   what it is, 3232, 3598  
**Ghent**, canal to Antwerp, 3455  
   its industries, 3458, 3464  
   oppressed by Charles V., 3460  
   treaty of, 1400, 3901  
**Ghibellines**, party in Italy, 3018  
**Ghiberti, L.**, life, 2782  
   made gates of Florence Baptistery, 4161  
   portrait, 2779  
**Ghoorkas**, a race in India, 1706  
**Ghosts**, belief in, 3233  
**Giant**, of the Peak, legend, 2377  
   who carried the poor, story, 1008  
   with three golden hairs, story, and pictures in  
   colour, face 1053  
**Giant centipede**, picture, 3297  
**Giant dock**, 4966; picture, 4963  
**Giant humming bird**, 1737, 1740; pictures, 51,  
   1741, 1742  
**Giant Lily**, 5272  
**Giant lizard**, picture, 44  
**Giant Mountains**, in Germany, 2752  
**Giant petrel**, 1626; picture, 1627  
**Giant's Causeway**, picture, 4821  
**Giant wood-louse**, picture, 3297  
**Giant wood-wasp**, picture in colour, face 3140  
**Gibbon, E.**, life, 4680; pictures, 4675, 4677  
**Gibbon**, animal, 604; help in study of human  
   disease, 3077  
   picture, 603  
**Gibbs, James E. A.**, improved sewing-machine,  
   1624  
**Gibraltar**, capture by British, 1875, 3358  
   its height, 3351  
   named after Gebel-Tarik, 3353  
   picture, 1880  
**Gibson, John**, sculptor, 4162  
**Gilbert, Sir Humphrey**, lost at sea, 267  
**Gilbert, William**, his life, 2113  
**Gilder, Richard Watson**: see Poetry Index  
**Gilgamesh**, story of his adventures, 4981  
**Gillaks**, Siberian race, and picture, 3751  
**Gill-run-over-the-ground**: see Ground-ivy  
**Gilman, Samuel**, author of Fair Harvard, 2957  
**Gimlet**, its use, and picture, 338  
**Giocondo, Giovanni**, his life, 1252  
**Gioja, Flavio**, puts fleur-de-lys on compass,  
   5650  
**Giorgione**, his life, 1256, 1260  
**Giotto**, how he drew a circle, 3428  
   life, 2780; pictures, 2779, 2789  
   work as painter, 4586  
**Gipsy moth**, 3139  
**Gipsywort**, and picture, 4969, 4970  
**Giraffe**, its life-story, 998  
   pictures, 51, 997  
**Giralda Tower**, 3356, 3361  
**Girardon, Francois**, sculptor, 4162  
**Girardot, Georges**, his picture of Columba's  
   first sight of Scotland, 4706  
**Girder bridge**, 27  
**Girl**, desperate ride, story, and picture, 2803  
   girl who walked to London, story, 2204  
   good and happy, story, 5436  
   Hogarth's picture, 763  
   little girls of long ago, 2711  
   trusted with state secrets, story, 4336  
   who held the fort, story, with picture, 127  
   why boys are stronger, 2456  
**Girodet, M.**, picture of Napoleon, 4358  
**Gironde**, mouth of the Garonne, 2394  
**Girondins**, in France, 4060; picture, 4059  
**Gisborne, Thomas**: see Poetry Index  
**Giseh**, the Pyramids at, 5004  
**Glacier**, Asulkan, picture, 5610  
   in Switzerland, 5671, 5673  
   largest glacier in Europe, 3601

# INDEX

- Glacier**, pictures, 2515  
river of ice, 409, 2515, 3228
- Gladiators**, who they were, 5265
- Gladiator's (the) Appeal**, a speech, 5505  
picture, 5504
- Gladiolus**, 1509, 1817, 4462, 5272  
origin, 5272  
pictures, 1509, 5279
- Gladstone, William Ewart**, how he governed  
the country, 2388  
pictures, 2379, 2387, 2388  
what he said of Homer, 5127
- Glaistdale**, Lovers' Bridge at, story, 1109
- Glamorgan**, what name means, 5388
- Gland**, its functions, 1446, 1911, 2344  
produces white cells, 1443  
sweat glands, 1911
- Glasgow**, what name means, 5388
- Glass**, green glass, 2129  
how a bottle is made, and pictures, 1174  
how it was first made, 53  
how to mend it, 4249  
light passes through it, 3762  
models of natural history objects, 4902  
production of in U. S., 2661  
where glass comes from, 1173  
why it cannot be bent, 4231  
why we can see through it, 1266, 2622
- Glasses**, how to get music from them, 4461  
why cold water cracks a hot glass, 1062  
why they do not break if boiled, 1372
- Glass-snake**, a lizard, 1219; picture, 1226
- Glasswort**, plant, and picture, 5190, 5192
- Glastonbury**, first church in England, 5524
- Gleaners, The**, picture, 2395
- Glenallan**, the lost heir, story, 1649
- Glenower, Owen**, Welsh champion, 118
- Globe**, how it is marked, 1750  
pictures, 1749, 1751
- Globe-fish**, 210; pictures, 51, 209
- Globe-flower**, picture, 4837
- Globe-thistle**, with picture, 5271, 5278
- Glory of the snow**, flower, 5272
- Glossina palpalis**, insect, 3145
- Glottis**, the voice-box, 1634
- Gloucester**, the fairy horn, legend, 1983  
what name means, 5388
- Glove**, sachet, and picture, 1204
- Glow-worm**, 155, 3256; picture, 3257  
story concerning, 5344
- Glue**, how to prepare, 333
- Glume**, in botany, 1332
- Glutton**: see *Wolverene*
- Glyptodon**, prehistoric animal, picture, 44
- Gnat**, 3146; pictures, 2323, 3143
- Gneiss**, a rock, 4246
- Goat**, as a pet, picture, 379  
goat and the lion, fable, and picture, 3508  
life-story, 378, 380, 2328  
made from a pear, 5666
- Goat's-beard**, closes its flower early, 3950  
picture, 3949
- Goat-sucker**, bird, 1740, 1748
- Goat-willow**, the willow, 3191
- Gobi**, desert, 3074, 3933; picture, 4125
- Goblins**, in the gold-mine, story, and pictures  
in colour, face 328  
the fire goblins, tale, 1324
- Go-cart**, how to make with reels, 4352
- Godavery**, river of India, 1546
- Goddess and tree**, fable, and picture, 4804
- Godfrey**, of Bouillon, in First Crusade, 1587
- Godfrey, Miss Elizabeth**, English children in the Olden Time, extract from, 5230
- Godiva, Lady**, how she helped her people, 5386
- Godowns**, in Japan, 5561
- Godwin, Earl**, and King Edward, 434
- Goethe, J. W.**, 2748, 5222; picture, 5217
- Gog and Magog**, 1318; pictures, 1319
- Golab Khan**, in Indian Mutiny, 1914
- Golconda**, in the Deccan, 1546  
tombs of kings, picture, 1551
- Gold**, an element, 838, 839  
discovered in Alaska, 1278  
discovered in Australia, 1358  
discovery in 1848, 1834  
expeditions in South America, 4504  
found in England, 4115  
found in the sea, 2619  
gold dust, picture, 2325
- Gold**, gold-mine, picture, 1357  
in Alaska, 4042  
in Canada, 5599, 5601  
its formation, 1571  
methods of procuring, with pictures, 1358  
production of, in U. S., 2660  
specific gravity, 3816  
what 15 or 18 carat means, 1870  
why called a noble metal, 1293  
why it does not tarnish, 1776  
why more valuable than silver, 1570
- Gold Coast**, of Africa, inhabitants, 1768
- Golden apple**, story, 1683
- Golden bird**, story, and picture, 874
- Golden carp**, picture, 2679
- Golden eagle**, 1940, 1842  
picture, 1838; egg, picture, 1744
- Golden fleece**, story, and pictures, 185
- Golden Hind**, the, Drake's ship, 266
- Golden Horn**, Constantinople, 3150
- Golden mountain**, king of the golden mountain, story, and picture, 4225
- Golden pheasants**, 1515; pictures, 1516, 1741
- Golden plover**, 1518; picture, 1517
- Golden-rayed lily**, picture, 5278
- Golden river**, king of the, story, 1433
- Goldenrod**, seaside, picture, 5184
- Golden rule**, 1100
- Golden saxifrage**, picture, 5032, 5033
- Goldfinch**, 2058, 2328  
pictures, 1741, 2059; egg, picture, 1744
- Goldfish**, feed on ant's eggs, 2946
- Goldlocks**, story, 5075
- Gold Mountains**, part of Selkirks, 5607
- Goldschmidt, Otto**, husband of Jenny Lind, 5497
- Goldsmith, Oliver**, epitaph on Burke, 216  
his life, 1732  
pictures, 213, 1725, 1731, 4681  
poems: see *Poetry Index*
- Goldylocks**, flower, 5116
- Golf**, field golf, 724  
how to play, and picture, 3169, 3170
- Goliath heron**, 1954; picture, 1950
- Gong**, its sound, 3756
- Good-bye**, its meaning, 4603
- Goodsell, Dr. G. W.**, companion of Peary, 5212
- Goodwin Sands**, 1413, 3971  
Goodwin Sands lighthouse, picture, 4428
- Goodyear, Charles**, vulcanised rubber, 2679, 5378
- Goody Twoshoes**, story, with picture, 5157
- Goose**, birds of goose family, pictures, 1959  
goose with the golden eggs, fable, and picture, 3852  
how long it lives, 2328  
pictures, 1519, 1521, 3893
- Gooseberry**, American, 4839  
its family, 4112; picture, 651  
was once wild, 1513, 1522
- Goose march**, game, 2572
- Gopher**, animal, its habits, 672
- Gordian knot**, what it means, 5534
- Gordon, Charles W.**, his novels, 4472
- Gordon, General**, campaign in China, 114  
picture, 4170  
work in Egypt, 4260
- Gordon College**, at Khartoum, 4260
- Gorge**, how it is formed, 407
- Gorget bird of paradise**, 1738; picture, 1742
- Gorgon**, turned people to stone, 1049
- Gorilla**, 601, 3076; pictures, 603, 3677
- Gorse**: see *Prickly furze*
- Goshawk**, 1846; picture, 1845
- Gota Canal**, 3600
- Gotham**, how it got a bad name, story, 4130, 4705
- Göthenburg**, a port of Sweden, 3600
- Goths**, conquest of Rome, 3012, 5268  
defeated by Narses, 2913  
defeated the Romans, 2522  
in Iberian Peninsula, 3352  
pictures, 2913, 5263
- Goujon, Jean**, sculptor, 4162
- Gould, Hannah**: see *Poetry Index*
- Gounod, Charles François**, composer, 3252
- Gourmand, General**, friend of Napoleon, 1298
- Gourgues, Dominique de**, captured forts in Florida, 262
- Gout**, brooklime as remedy, 4968
- Government, The United States**, description of, 1593



# INDEX

**Gracchi**, mother of, story, and picture, 2633  
the famous Roman brothers, 416  
tried to reform Rome, 5266  
**Grace Church**, picture, 4309  
**Gradenigo, Pietro**, doge, 1253  
**Grafting**, use in making new varieties of  
plants, 2776  
**Graham, Sir Robert**, murdered James I. of  
Scotland, 3086  
**Gramme**, the unit of mass, 3671  
**Gramophone**, how it works, 3091  
**Grampus**, whale, 1082, 1086; picture, 1083  
**Granada**, Moorish province in Spain, 3354  
besieged, 3356  
**Grand Falls**, New Brunswick, suspension  
bridge and picture, 30  
**Grandmother**, her school, picture, 193  
**Grand Fré**, scenes in, pictures, 2465  
**Granious**, battle of, 1306  
**Granite**, rock, 410, 4246, 5198  
in Canada, 5600  
**Granny knot**, how to make, 235  
**Granny's Wonderful Chair**, stories by Frances  
Browne, 1043, 1471; with picture, 1043  
Child Charity, 1043  
cobblers and the cuckoo, 2297  
Fairfoot, 4001  
greedy shepherd, 1046  
lords of the grey and white castles, 1897  
merry cobbler and his coat, 2372  
Merrymind, the little fiddler, 4375  
**Grant, Colonel James**, explored Africa, 284  
**Grant, Sir Robert**, wrote a hymn, 2000  
**Grant, Ulysses S.**, administration, 3537  
at Shiloh, Fort Henry, etc., 2013  
at Vicksburg, 2016  
elected president, 2024  
from the Wilderness until the end of the war,  
2019-2022  
in command of Army of the West, 2018  
life, 796  
monument to, 5515  
picture, 787, 2023, 3532  
trip around world, 2417  
**Grape**, 642; picture in colour, 646  
**Grape-fruit**, picture in colour, 641  
**Grape hyacinth**, 5272  
**Graphite**, a form of carbon, 3979  
in Canada, 5600  
used in lead pencils, 4746  
where it is found, 4246  
**Grassmere**, picture, 3253  
**Grass**, all grasses flower, 2078  
how it grows everywhere, 2976  
how it is made, 3862  
importance as food, 2923  
its life-story, 1331  
pictures, 1331, 1333, 2976  
why it turns yellow when cut, 5250  
**Grasse, Count de**, commander of fleet, 992  
**Grasshopper**, and the ant, fable, 2141  
how it differs from the locust, 3141  
picture, 3078; in colour, face 3141  
**Grass of Parnassus**, description, 5036  
flower, 4112  
picture, 5034  
**Grass-pea**: see Pea, grass  
**Grass snake**, 1378  
**Gravel**, forms part of earth's crust, 2887  
made by water, 407  
**Graves, Alfred**, Festival: see Poetry Index  
**Graves, Collins**, saved people of the valley of  
Williamsburg, 4958  
**Graves, John Woodcock**, author of song, 5494  
**Gravitation**, affects water, 33  
balances the sun and planets, 2280  
brings a stone to earth, 4549  
electricity theory, 5256  
explanation of law, 303, 308  
force in the moon, 2224  
Galileo's discovery, 304, 3551  
increases rate of falling bodies, 3432, 3672, 3814  
in relation to a burned candle, 5685  
its force varies, 3813  
has helped to shape the earth, 404  
how a tree resists it, 3961  
how it affects us in walking, 3437  
how it is opposed, 3544  
keeps the air round the earth, 5024  
large bodies attract smaller ones, 3885

**Gravitation**, law discovered by Isaac Newton,  
303, 1944, 2426  
makes the sun shrink, 426  
not so powerful as cohesion, 618  
scales and globe showing effect of earth's  
gravitation, picture, 3551  
the pull of the earth, 3835  
the working of the law, 3547  
universal law, 3761  
use of law in astronomy, 1948  
weight depends on it, 3234, 3671  
what would happen if it ceased, 1577  
which holds the sea in place, 5687  
why it does not pull clouds down,  
**Gray, Capt. Robert**, discovery of Columbia  
River, 1396  
**Gray, Nisha**, patented a telephone, 4317  
**Gray, Stephen**, experimented with electricity,  
2115, 4314  
**Gray, Thomas**: See Poetry Index  
**Gray's Elegy**, twenty-five ways to transpose  
one line, 5457  
**Grease**, how to remove, 4456  
**Great auk**, 48, 1630, 1428; picture, 1425  
**Great Barrier Reef**, Australia, 1466  
**Great Bear**, called the Plough, 2612  
legend of the Great Bear, 3314  
made up of fixed stars, 146  
pictures, 152, 2611, 2613, 2617  
**Great Belt**, between Danish islands, 3598  
**Great bird of paradise**, 1738; picture, 1742  
**Great Dividing Range**, in Australia, 1368  
**Great Eastern**, ship, 2476; picture, 2473  
**Greater Colindale**, its family, 4110  
**Greater Hellas**, Grecian colonies, 5124  
**Great Expectations**, story of the novel, 2435  
**Great Gable Mountain**, picture, 5017  
**Greathed, Mr.**, commissioner, 1914  
**Great Meadows**, battle of, 882  
**Great northern diver**, 1632; picture, 1631  
**Great Onontio**, The, Indian name for Fron-  
tenac, 3621  
**Great Paul**, largest bell in London, 1541  
**Great Salt Lake**, 1993, 3072  
**Great titmouse**, 2216; pictures, 1744, 2217  
**Great Tom of Westminster**, 1536  
**Great Trek**, 1769  
**Great valerian**, 4970; picture, 4965  
**Great water beetle**, picture, face 3140  
**Great Western**, ship, 74, 2473; picture, 2473  
**Greece and Greeks**, arch not used in buildings,  
630  
astronomy studied, 1655, 1942  
belonged to the Venetians, 3158  
competitions in music and acting, 5004  
conquered by Mohammed II., 3156  
conquered the Punjab, 1700  
flag, picture, in colour, face 1640  
glory that was Greece, 5121  
great men of Greece, 1301  
Greek sailor, picture, 3225  
history, 3150, 3219, 5121, 5124, 5129, 5130  
influence on the world, 5128  
its flag, face 1640  
love of music, 4607  
pottery, 5126  
power in Egypt, 279, 4790  
retreat from Cunaxa, 5094, 5076  
sculpture, 498, 499  
stories of Greece, 2301  
temples, 5128  
thinkers of Greece, picture, face 1301  
war with Phœnicians, 5129  
war with Rome, 5262  
war with the Persians, 5080  
war with Trojans, 67  
**Greedy shepherd**, the, story, and pictures,  
1046  
**Greek kalends**, its meaning, 5534  
**Greek language**, study revived, 3156  
**Greely, Lieutenant**, old camp discovered, 5214  
**Green, J. M.**, the death of a queen, an extract,  
5502  
**Green, Kitty**, and the giant, story, 2377  
**Green**, colour, 1935, 4508  
**Greenaway, Kate**: see Poetry Index  
**Greenbottle fly**, picture, face 3140  
**Greene, Albert Gorton**: see Poetry Index  
**Greene, General Nathaniel**, in the revolution,  
984, 992; pictures, 985, 4153

# INDEX

- Greene, Mrs. Nathanael**, suggested cotton-gin, 1825  
**Greenfinch**, 2058; picture, 2060  
**Greenland**, discovered, 267  
 its exploration, 3594, 4724  
**Greenland shark**, 2444  
**"Green Mountain Boys,"** under Ethan Allen, 384, 1820  
**Greenough, Horatio**, sculpture of, 4841  
**Greenwich Observatory**, 1662  
**Greenwich time**, what it is, 3036  
**Gregory the Great**, pope, kept the Lombards in check, 3014  
 sent Augustine to England, 430, 2329  
 wrote hymns, 1995  
**Gregory VII.**, pope, and Henry IV. of Germany, picture, 4714  
 quarrels with the kings, 2526  
 tried to start a holy war, 1586  
**Grenada Island**, Carib's last stand, 1877  
 its harbour, 1878  
 plague of ants, 2950  
**Grenville, Sir Richard**, 3662, 4205  
 commander of the Revenge, 5394  
**Gresham, Sir Thomas**, his crest, 4522  
**Grote**, in a story of Shetland, 5419  
**Graville, Sir Fulke**, his epitaph, 467  
 poem: see Poetry Index  
**Grey, Lady Jane**, 845, 2534, 2966  
**Grey, Lord**, governor-general, 4106  
**Grey**, colour, 1935, 4508  
**Grey-hen**, a heath-fowl, 1515  
**Grey parrot**, picture, 1743  
**Grey rat**, picture, 771  
**Grey shoulder knot moth**, picture, 3413  
**Griffin** culture, picture, 1841  
**Grilse**, a young salmon, 2680  
**Grimm brothers**, their lives, 1468  
**Grimston, Lady Anne**, her grave, picture, 1673  
 her story, 1673  
**Grindelwald**, pictures of the valley, 5671, 5673, 5674  
**Griotlid**, a road in Norway, picture, 3599  
**Griselda**, Canterbury Tale, 437  
**Grislybeard, King**, story, 1189  
**Gristle**, is cartilage, 2439  
**Grisly bear**, pictures, 138, 4729  
**Groot, Hugo van**: see Grotius  
**Grosbeak**, cardinal, bird, 2061  
**Grotius**, picture, 2629  
**Ground-ivy**, description, 4292  
 picture, 4291  
**Ground-nut**, picture, 5188  
**Groundsel**, its family, 4112  
**Grouse**, American, 1518  
 its life-story, 1515; picture, 1517  
**Grover, W. O.**, improvement of sewing-machine, 1624  
**Growth**, its cause, 4745  
 rate of growth varies, 4113  
 why do we not grow big all at once? 5640  
 why it stops, 2454, 3979  
**Grubs**, how to get rid of them, 3278  
**Guadalquivir**, river in Spain, 3352  
**Guadiana**, a river, 3352  
**Guam**, taken for coaling station, 2190  
**Guanaquato**, in Mexico, 4386; picture, 4391  
**Guard the block**, game, 3614  
**Guatemala**, 4392; pictures, face 1640, 4387  
**Guayaquil**, canoe market, picture, 4575  
**Gudgeon**, used as bait, 2681; picture, 2679  
**Guilderland**, in the Netherlands, 3458  
**Guelder rose**, 3962; description, 4292  
 picture, 4291  
**Guelphs**, party in Italy, 3018  
**Guericke, Otto von**, electric light discovery, 2114; with portrait, 2113  
 metal cups experiment, picture, 2121  
**Guerrière, La**, and Constitution, 1398, 2901  
**Guesclin, Bertrand du**, and picture, 2906  
**Guevi**, small antelope, 382; picture, 381  
**Guiana**, British Guiana's heavy rainfall, 1878  
 dependent states, 4500, 4576  
**Guldhall**, London, and pictures, 1318  
**Gulford Court House**, battle of, 992  
**Gullemot**, bird, 1630; picture, 1631  
**Guliotine**, used for executions, 2272  
**Guinea Coast**, partly British, 1765  
**Guinea-fowl**, 1520; picture, 1519  
**Guinea-pig**, different kinds, 506  
**Guinea-pig**, hair, through microscope, picture, 2323  
 how to keep them, 4458  
 pictures, 507  
**Guinevere**, King Arthur's queen, 870, 3311  
 pictures, 868, 1977, 3311  
**Guiscard, Robert**, 1587  
**Guise, Duke of**, story of, 3472  
**Gull**, pictures, 51, 1629, 1744  
 the various kinds, 1628  
**Gullet**, what it is, 2208, 2343  
**Gulliver's Travels**, and pictures, 1309, 1314  
**Gum-tree**, the eucalyptus, 1364  
**Gun**, a son of a gun, story, 3848  
 how it illustrates laws of motion, 3470  
 picture, 2227  
 why it makes a noise, 2228  
 why the flash precedes the noise, 777  
**Gundulf**, built the Tower, 1158  
**Gunpowder**, what it is made of, 2228  
**Gunpowder Plot**, story of, 1022, 1791  
**Gurdun, Bertrand de**, shot Richard I., 2001  
**Gurliitt, Cornelius**, wrote music, 4094  
**Gustavus Adolphus**, king of Sweden, closed the Baltic to the Russians, 3628  
 children and picture, 3790  
 endowed Upsala University, 3600  
 gained lands from Germany, 3596  
 helped Protestants in Germany, 2528  
 praying for victory, picture, 3593  
**Gustavus Vasa**, king of Sweden, 3596  
 founded Helsingfors, 3753  
 planned the Gota Canal, 3600  
 with a drinking party, picture, 3593  
**Gutenberg, John**, life, 3568; portrait, 3567  
**Guthrie, Dr. Thomas**, his work for ragged  
**Guy**, of Lusignan, king of Jerusalem, 1589  
**Guy**, of Warwick, story of his life, 1322  
**Guy Mannerling**, a novel, 1495, 1603  
**Gymkhana**, for Christmas, 2252  
**Gymnastics**, Swedish system, 3600  
**Gypsum**, a form of salt, 1800, 4246  
 in Canada, 5601  
**Gyroscope**, picture, 89  
 principle of, 89

## I

- Haakon V.**, king of Norway, 3082  
**Haakon VII.**, king of Norway, 3558  
**Haarlem**, besieged by the Spaniards, 3480  
 town in Holland, 3458, 3458  
**Harboas Corpus Act**, 1028  
**Habitat**, of a plant, 3949  
**Haddock**, fish, and picture, 202, 203  
**Hadrian**, emperor, 532; portrait, 533  
**Hadrian's wall**, 532  
**Hæmoglobin**, what it is, 1384, 1665  
**Hague, The**, capital of Holland, 3456  
 has beautiful Japanese work, 366  
**Hail**, made of ice crystals, 2073  
**Hail Columbia**, history of song, 2956  
**Hainault**, lords of, in Netherlands, 3458  
**Hair**, its use, 156, 2080  
 magnified hair, picture, 1961, 1963  
 the girl who sold her hair, story, 3168  
 what the hair is, 1961  
 why hair turns grey, 2453  
 why it does not hurt when cut, 3864, 4121  
 why it goes on growing, 3864  
 why it stands on end with fright, 4233  
**Hair grass**, picture, 2982  
**Hairpin work**, and picture, 4459  
**Haiti**: see Hayti  
**Hake**, a fish, and picture, 201, 203  
**Hakon**, kings of Norway: see Haakon  
**Halavi ray**, picture, 2449  
**Hale, Nathan**, life and death, 3811  
 statue of, 4850; and picture, 3810  
**Halevy, Ludovic**, his story, The Abbé Constantin, 4761  
**Half-hitch**, how to make, and picture, 3283  
**Half Moon**, the, rebuilt, 268  
**Halfpenny**, trick, and picture, 1926  
**Halibut**, fish, 201, 206; picture, 205  
**Halifax**, Nova Scotia, fortified harbour, 5601  
 picture, 5602  
 town of Nova Scotia, 1240, 1247  
**Hall, Captain**, his book on Eskimos, 4724

# INDEX

- Hall, G. H.**, as inventor, 2667  
**Hallam, Arthur Henry**, friend of Tennyson, 2153, 3969  
**Halley, Edmund**, made discoveries about a comet, 2497  
 portrait, 1655  
 story of his life, 1662  
**Halley's comet**, 1662; picture, 2495  
**Halogen**, means salt-maker, 1290  
**Halos**, origin of, 5650  
**Hals, Franz**, his picture, *The Laughing Cavalier*, 4591  
 portrait painter, 4587  
**Ham**, means home when at end of a name, 427  
**Hamburg**, joined Hanseatic League, 2526  
 trade and shipping, 2750; with picture, 2746  
**Hamerton, S. C.**: see Poetry Index  
**Hamlicar**, Carthaginian general, 5262  
**Hamilton, Alexander**, during Revolution, 1389, 1392-94; killed, 1398; portrait, 1391, 1395  
 portrait bust of, 4844  
**Hamilton, Patrick**, died for his faith, 5068  
**Hamlet**, the story of the play, 479  
 where his tomb is, 3600  
**Hammer**, breaks stone when wood will not, 2880  
 how to use, and picture, 339  
**Hammerfest**, town of Norway, 3601  
**Hammerhead**, bird, 1956; picture, 1957  
**Hammer-headed shark**, and picture, 2444, 2445  
**Hamurabi** code, 3399, 4976  
**Hamouse**, mouth of Tamar, picture, 4436  
**Hampden, John**, and unjust taxes, 1024  
 how he opposed Charles I., 1894  
 portrait, 1896  
**Hamper**, basket hamper making, 2131  
**Hampton Court**, Wolsey's palace, 845  
**Hancock, John**, arrested, 982  
 portrait, 987  
**Hancock, Thomas**, worked at vulcanising process, 5678  
**Handel, George**, life, 3243; with pictures, 3243, 3245  
 love of music, 3292  
**Hands**, bones, picture, 2645  
 effect of quicksilver, 3694  
 how hands are formed, 2645  
 how to make moving figures with, and pictures, 5103  
 how to make shadows on the wall, 5201  
 injured hands, 4749  
 strength of right and left hands, 5020  
 the lines on our hands, 1134, 2460  
 warm after playing with snow, 1643  
 why some people use the left, 1989  
**Handspike**, for making knots, 235  
**Handspike hitch**, and picture, 3283  
**Handy Andy**, story of the book, 3049  
**Hankau**, tea trade centre, 115  
**Hannibal**, army crossing the Rhone, picture, 5263  
 crossed the Alps, 2876, 5264  
**Hannington**, bishop, 3489; portrait, 3483  
**Hanover**, interesting district, 2578  
**Hanover, House of**, 1496, 2528  
**Hanoverian kings**, reign, 2540  
**Hans**, in story of Rosy Apple, 5345  
**Hanseatic League**, formation, 2526  
 trade of its towns, 3458  
 war with Scandinavia, 3594  
**Hansel and Gretel**, story, and pictures, 1468, 3305  
**Hanway, James**, use of umbrella, story, and picture, 3097  
**Happiness**, its effect on the body, 4746  
**Hapsburgs**, a prince as king of Hungary, 2864  
 Austrian house founded, 2527  
 came into power, 2861  
 unpopular in Switzerland, 2964  
**Hardanger Fiord**, in Norway, 3602  
**Hard Times**, story of the novel, 2434  
**Hardie, C. M.**, his pictures of Burns, 3902  
**Hardy, Thomas**, famous writer, 2316  
**Hare**, changes its coat in winter, 1777  
 hare and tortoise, fable, and picture, 462  
 how an eagle caught a hare, 1842  
 how it escapes, 384  
 picture, 383  
**Hare and hounds**, on horseback, game, and picture, 2972  
**Harebell**, description, 4614  
 picture, 4611  
**Hardeur**, captured by English, 2706  
**Haricot bean**, when to sow, 3176  
**Harleian manuscripts**, 1162  
**Harlem Heights**, battle of, 996  
**Harmony**, compared with discord, 2620  
 proper arrangement of sounds, 4607  
 what a harmony is, 4869  
**Harold**, made king of England, 434, 2702  
 pictures, 435  
**Harold Hadrada**, set fire to old Scarborough, 1320  
**Harp**, 1015  
**Harper's Ferry, Va.**, raided by John Brown, 2010, 3536  
**Harpoons**, made by the Cave men, 192  
**Harpseal**, 1090  
**Harpichord**, kind of piano, 1015  
**Harrier**, a falcon that eats mice, 1846  
**Harris, Joel C.**, date of birth, 1474  
 tales of Uncle Remus: see Brer Rabbit  
**Harrison, Benjamin**, administration, 3537  
 as president, 2418  
 picture, 3532  
**Harrison, William Henry**, administration and death, 3535  
 as president, 1830  
 defeats English, 1399  
 in Canada, 3901  
 opposes Tecumseh, a picture, 1821  
 picture, 3532  
**Harrogate**, a health resort, 1109  
**Harte, Bret**, his life, 1487; portrait, 1475  
**Hartford, Conn.**, founded, 524  
**Harnu al Bashid**, caliph, 2739, 3878  
**Harvard, John**, bequest to Harvard College, 518  
 statue of, 4846  
**Harvard College**, established, 518  
**Harvest mite**, attacks man, 3147  
**Harvest mouse**, 770; picture, 771  
**Harvest spider**, picture, 3299  
**Harvey, Wm.**, discoveries about circulation of the blood, 1446, 1579, 2320  
 his life, 4193; pictures, 4194, 4195  
**Hadrubal**, founded Carthage, 3357  
**Hassan**, sultan, mosque in Cairo, 4256  
**Hastings**, led Normans into Italy, 3014  
**Hastings**, battle of, 436  
**Hastings, Warren**, attacked by Burke, 214  
 in India, 1706  
**Hat**, how high is the, 5666  
 of paper, and picture, 1925  
**Hatcher, Julia**, her heroism, 4831  
**Hathaway, Anne**, her marriage, 3331  
**Hathor's temple**, pictures, 4787, 4791  
**Hat-shop-su**, queen of Egypt, 4787  
**Hatteras Inlet**, taken, 2014  
**Hauy, Valentine**, how he invented a method of reading for the blind, 1982  
**Havlock, Sir Henry**, relieved Lucknow, 1099, 1706  
**Haverghal, Frances Ridley**, hymn-writer, and portrait, 1998, 1999  
**Hawaii**, annexed, 3538  
 description, with pictures, 2181, 2182  
 in the Sandwich Isles, 2491  
 native musicians, picture, 1463  
**Hawarden Castle**, Gladstone's home, 2387  
**Hawk**, different kinds of hawks, 1846  
 enemy of the hoopoe, 1748  
**Hawke, Edward Lord**, defeated the French, 1094  
**Hawkes Bay**, New Zealand province, 1462  
**Hawkesbury River**, bridge, picture, 28  
**Hawk owl**, 1848; picture, 1847  
**Hawksbee, Francis**, father, made experiments with air, 2114  
**Hawksbee, Francis**, son, made scientific instruments, 2114  
**Hawkshawe, Mrs.**: see Poetry Index  
**Hawthorn**, meaning of word, 5116  
 pictures, 3449  
**Hawthorne, Nathaniel**, and the Alcotts, 2047  
 his life, 1470, 1479  
 Marble Faun (the), extract from, 5432  
**Hay, John**: see Poetry Index  
**Hay**, how it is cut, with picture, 4088  
 production of in U. S., 2422  
 what names come from it, 4907

# INDEX

- Haydn, Joseph**, pictures, 3245, 3251  
the story of his life, 3246
- Hayes, Rutherford B.**, administration, 3537  
election of, 2417  
picture, 3532
- Hay-fever**, how it is caused, 1332
- Hayfinch**, egg of, picture, 1744
- Hay-games**, and picture, 4136
- Hays, Charles M.**, life-work, 4472
- Hayti**, flag, picture, in colour, face 1640  
its other names, 1877  
rebellion of slaves, 1914  
where Columbus built a fort, 58
- Hazel**, its nut, picture, 1969  
nuts and wood, 1965  
tree, 1965
- Healitt, William**, his life, 4683  
portrait, 4675
- Head**, and the limbs, 2541
- Headache**, are headache powders good things?  
5643  
how we get it, 4232  
what causes, 5643  
what makes a sick-headache, 5643
- Health**, effect of hypnotism, 5170  
how to eat and be healthy, 2343  
our ancestors' health, 2799
- Hearing**, and speaking, 3953  
how it is governed by the brain, 3777  
the limit of hearing, 5174  
the marvel of hearing, 3866  
what it is, 509  
where the sense of hearing is, 3721  
why we hear better at night, 2504  
why we hear better over water, 2455  
why we hear better with eyes shut, 4598  
why we hear little when asleep, 1575
- Heart**, effect of fear on its beat, 1576  
pictures, 1579, 1581  
the living pump, 1579  
what makes it beat, 1576  
why it beats faster when we run, 5016
- Heart of Midlothian, The**, extract about tree  
planting, 3077  
story of the novel, with picture, 1757
- Heartsease**, description, 4616  
how bees carry pollen to, 45  
picture, 4612
- Heat**, big things take longest to cool, 3431  
conduction of heat, 1061, 4183  
different kinds of heat, 4179  
difficulty of getting rid of heat, 4050  
elements that give off heat without burning,  
4322  
fatal to living things, 4052  
finds its own level, 4183  
friction produces heat, 3094  
heat and temperature, 4473  
hot things and cold things, 4047  
how heat makes things expand, picture, 4369  
how heat travels, 4319  
how heat works for us, 4365  
how to measure heat, 4473  
importance of laws of heat, 4476  
intense heat in the moon, 2226  
longer than one-half full, 3430  
makes things expand, 658, 1372  
production by chemical changes, 4476  
production by machines, 4366  
rays of, bent by lenses, 2880  
state of movement in the ether, 3466, 4048  
sun and planets losing heat, 2283  
the sense of heat, 1964  
the sun's temperature, 2082  
the ways heat is given out, 3377  
things transparent to heat, 4320  
travels at the same speed as light, 1774  
what convection of heat is, 1061, 4181  
what heat is, 1061, 1421, 2508  
what latent heat is, 4473  
what sensible heat is, 4474  
what specific heat is, 4475  
why brass gets hot when rubbed, 2508  
why India is hotter than Alaska, 1060  
why we look red when we are hot, 3695
- Heath, John E.**, as inventor, 2668
- Heath**, cross-leaved, picture, 4615  
purple, picture, 4615  
the heath family, 4112
- Heather**, source of briar-wood, 5524
- Heavens**, the, path of earth and moon, picture,  
2219  
pictures, 3031, 3687
- Hebe**, whom Hercules married, 3314
- Heber, Reginald**, bishop, his life, and portrait,  
1997, 1999
- Hectograph**, how to make, and picture, 1287
- Hector**, Sir, knight, 67, 867, 1680
- Hecuba**, Priam's wife, 67
- Hedge-garlic**, description, 4424  
picture, 4420
- Hedgehog**, 506; pictures, 507, 3893
- Hedge-sparrow**, 2057; egg, picture, 1744
- Hedin, Dr. Sven**, explored the Tarim River, 3334  
in the Gobi Desert, 3074  
pictures from his book, 3937, 4124  
what he said about sand deserts, 4122
- Hegira**, the flight of Mohammed, 3876
- Height**, alteration in men's height, 2673  
when we are tallest, 2455
- Heilmann, Andrew and Anton**, printers, 3569
- Heine, Heinrich**, life and writings, 5222  
portrait, 5217
- Heir and the will**, story, with picture, 5159
- Hekla, Mt.**, volcano in Iceland, 2075, 3598
- Helen**, the cause of the Trojan War, 67
- Helena, St.**, history of, 5321
- Heliograph**, what it is, and picture, 4313, 4318
- Heliotope**, what it means, 5116
- Helium**, an element in argon, 1206  
can be liquefied, 4050  
found in the sun, 5023  
made from radium, 639, 1419
- Hellebore**, black: see Christmas Rose  
stinking: see Setterwort
- Helleborine**, white, an orchid, 4423
- Hellespont**, crossed by the Persians, 5062  
Persians crossing, picture, 5172
- Helmholtz, Hermann**, studied the tuning of  
resonators, 4915
- Helsingborg**, town of Sweden, 3600
- Helsingfors**, its founder, 3753
- Helsingor**, town of Denmark, 3600
- Helvetian Republic**, 2967
- Hem**, how to make it, 456, 535
- Hemans, Felicia Dorothea**, life and work of,  
with pictures, 5468, 5470
- See also Poetry Index**
- Hematite**, where it is found, 5197
- Hemispheres**, pictures, 1751
- Hemlock**, its family, 4112
- Hemlock-tree**, description, 5438  
picture, 5444
- Hemlock water dropwort**, 4970
- Hemp**, how made into rope, and pictures, 3992
- Hemp agrimony**, 4970; picture, 4967
- Hem-stitching**, and picture, 2351, 2352
- Hen**, and chickens, picture, 1513  
hen and the fox, fable, 4008  
how long it lives, 2328  
its instinct, 4549  
number of toes, 1985  
the real mother, 2229  
what its eggs are made of, 1867  
why hens do not crow, 4117
- Henbane**, description, 4417  
picture, 4416
- Hennebont**, besieged and burnt, 2478
- Henrietta Marie**, daughter of Henry IV. of  
France, 2070  
wife of Charles I., 1022, 1887
- Henry**, prince of Brunswick, 3883
- Henry**, of England, eldest son of James I.,  
1022, 1887
- Henry I.**, of England, built part of the Tower,  
1158  
his character, 2702  
his reign, 592  
how his only son was drowned, 2477  
portrait, 2710
- Henry II.**, of England, became king, 2532  
his character, 2702  
his reign, 594  
portrait, 2710
- Henry**, struggled against the Church, 4713
- Henry III.**, of England, his action regarding  
coal, 800  
his reign, 598  
how he enriched Westminster, 4636

# INDEX

- Henry III.**, of England, king for fifty years, 2704  
pictures, 599, 4638
- Henry IV.**, of England, his reign, 764  
seized the throne, 2706
- Henry V.**, of England, conquered half of France, 120, 2063, 2706  
his reign, 764  
imprisoned by Judge Gascoigne, story, and picture, 4830  
pictures, 2706, 2721  
soliloquy, 5362
- Henry VI.**, king of England, 764  
portrait, 2710
- Henry VII.**, of England, chapel in Westminster, 841  
ended the Wars of the Roses, 2533  
forced money from the people, 842  
portrait, 2710  
united houses of York and Lancaster, 766, 2706
- Henry VIII.**, of England, his character, 2706  
his reign, 844  
persecuted the Protestants, 5067  
pictures, 840, 2707
- Henry**, prince of Navarre, as a boy, 1654
- Henry IV.**, king of France, 2200
- Henry IV.**, of Germany, did homage to the pope, 3014  
quarrelled with Gregory VII., 2526
- Henry**, St., and Finland, 3630
- Henry**, Patrick, against Constitution, 1390
- Henry**, Edmund, the story of the book, and picture, 3266
- Henry the Navigator**, his discoveries in Africa, 4252  
who he was, 3354
- Henson**, Matt, attendant of Peary, 5212  
at the Pole, 5213
- Hera**, Greek goddess, 2301
- Heraclius**, defeated the Persians, 3878, 4256, 5066  
fought against the Persians, 3153  
sent presents to Mohammed, 3153
- Heraldic rose**, picture, 3428
- Herb-bennet**, 4966
- Herbert**, George, hymn-writer, 2000  
in his garden, picture, 1997  
poems: see Poetry Index
- Herbivorous animals**, 2099
- Herb-Robert**, description, 4111, 4285  
picture, 4290
- Herbs**, what herbs to sow, 3176
- Herculeanum**, wall paintings found, 4585
- Hercules**, and the countryman, fable, with picture, 5206  
his twelve labours, 3314, 5163  
legends of Hercules, 3314, 3353  
picture, 5163
- Heredity**, what it means, 1987, 3089
- Heresford**, what name means, 5388
- Heresford Cathedral**, chained books, picture, 3567
- Hereward the Wake**, story of, 117
- Hermann**, defeated the Romans, 2522  
Hermann and the priests, picture, 2523
- Hermit crab**, 1410; pictures, 1416
- Hermit humming-bird**, 1740
- Hero**, daughter of Ænophon, 3313
- Herodotus**, an early historian, 279, 5217  
his history, 4790, 4971, 5064  
portrait, 5217
- Heroes**, a race with death, 4953  
Arnold von Winkelried, 3106  
brave Grizel Hume, 5615  
of peace, 3105  
of science, 3200  
of the nations, 117  
partners, 4959  
quiet heroes of the world, 625  
village of heroes, 625
- Heroline**, of the Southern Seas, 2491
- Heron**, how long it lives, 2323  
the heron, the cat, and the bramble bush, legend, 2744  
pictures, 1744, 1950  
what kind of bird it is, 1954
- Herrick**, Robert, poems: see Poetry Index  
wrote Cherry Ripe, 3743
- Herring**, how it is formed, 2437  
how many eggs it lays, 201  
how they are caught and prepared, 3768
- Herring**, its habits, 204  
pictures, 205, 3768  
the poisonous West Indian, 210
- Herringbone stitch**, and picture, 835
- Herring gull**, 1623; picture, 1629
- Herrman**, Mrs., lumber and furniture merchant, 3066
- Herschel**, Caroline, helped her brother in astronomy, 2429  
her life, 1664  
portrait, 1655
- Herschel**, Sir John F. W., catalogued the stars, 1664  
portrait, 1655
- Herschel**, Sir William, discovered Uranus, 2234, 2429  
his life, 1664; portrait, 1655  
studied the stars, 309
- Hertford**, what name means, 5388
- Hernegovina**, province, 2860, 3222
- Hesperides**, garden of, 1050, 3314, 5164
- Hesselius**, Gustavus, an early artist, 4147, 4148
- Hessians**, hired by English, 984
- Hextable**, battle of, 195
- Hiccough**, how to stop it, 1638
- Hickory**, shagbark, 5442; with picture, 5443  
shagbark nuts, 1965
- Hickson**, W. E.: see Poetry Index
- Hidalgo**, rebelled against Spaniards, 4386
- Hide-and-seek** on the Hearthrug, game, 237
- Hidoyoshi**, conquered Korea, 866
- Hieroglyphics**, history of Darius written on rocks, 5080  
how we learned to read them, 4782, 5100  
Sumerian picture writing, 4974  
used by the Egyptians, 678  
writings of Assyria, 4973
- High tide**, how it is formed, 2281
- Hildebrand and Undine**, in story of a water nymph, 5518  
story, 4006
- Hill**, John B., stopped a runaway, 3108
- Hill**, Howland, the penny post, 1099, 3706
- Hills**, why they look blue, 3381  
why we want to run down hills, 4750
- Himalaya Mountains**, origin, 403  
spring from the Pamir Plateau, 3931  
their length, 4497
- Himis**, has a famous monastery, 3340
- Hinduism**, religion of India, 1700  
what it teaches, 1550
- Hindu Kush Mountains**, 3933
- Hindustan**, conquered by the Aryans, 1699  
northern half of India, 1546
- Hip-joint**, its strength, 2546  
picture, 2544
- Hipparchus**, great astronomer, 1656
- Hippocampus**, name for sea-horse, 210
- Hippoclidus**, who he was, 2301
- Hippocrates**, his life, 4196  
pictures, 4194, 4195  
visited Democritus, 3163
- Hippolyte**, whose girdle Hercules captured, 3314, 5164
- Hippopotamus**, early existence, 49, 50  
education of young, 5482  
how it is useful, 51  
its life-story, 997  
means river-horse, 5234  
pictures, 51, 994  
where it can live, 46  
why it is so stupid, 3565
- Hiram**, king of Tyre, 5124
- Hispania**, Roman name for Spain, 3353
- Hispaniola**, name for Hayti, 1877
- History**, how to keep a history notebook, 5358
- Hitches**, how to make, and pictures, 3283
- Hittites**, wars with Mesopotamia, 4974
- Hoarseness**, its cause, 2455
- Hoatzin**, bird, and picture, 1430, 1431
- Hobart**, the capital of Tasmania, 1362
- Hobbes**, Thomas, his life, 4620  
pictures, 4619, 4625  
wrote on association of ideas, 4940
- Hobby**, a falcon, 1846
- Hochelaga**, on site of Montreal, 3618
- Hockey**, how to play, and pictures, 4993  
in Canada, 5210
- Hoe**, used for weeding, 233
- Hofer**, Andreas, a patriot of the Tyrol, 2954

# INDEX

- Hofer, Andreas**, Hofer a prisoner, picture, 125  
 rose against Napoleon, 122  
**Hofman, Dr.:** see Poetry Index  
**Hogarth, William**, his picture of a shrimp girl, 763  
 pictures, 759, 4591  
 satirical painter, 764  
**Hogg, James**, poems: see Poetry Index  
 song-writer, and portrait, 3742  
**Hohenlinden**, battle of, 4360  
**Hohenzollerns**, who they are, 1640  
**Holderness**, after a gale, picture, 404  
**Hold fast!** let gol game, 2571  
**Holiday places**, tales of, 1108, 1320  
**Holland**, became a republic, 3462  
 became independent, 2528  
 great charter granted, 3460  
 history, 3455  
 how Holland gained its freedom, 124  
 how the sea saved Holland, story, 3553  
 how the teredo did damage to, 2388  
 products and trade, 3462  
 refuge of English, 516  
 showing its waterways, picture, 3455  
 war with England, 1027, 1028, 3463  
 See also Netherlands
- Holland**, material, where it is made, 3458  
**Holland**, counts of, their power, 3458  
**Holly**, 3442; picture, 3442  
 sea, picture, 5191  
**Hollyhock**, 1074, 5116  
**Holmby House**, prison of Charles I., 1299  
**Holmes, Oliver Wendell**, his life, 1483; with pictures, 1475, 1483  
 on Burns, 3907  
 poems: see Poetry Index  
**Holstein**, cause of many disputes, 3596  
 taken by Prussia, 2579  
 united to Denmark, 3596  
**Holy Grail**, story concerning it, 871  
**Holy Roman Emperor**, title taken by the Hapsburgs, 2852  
**Holy Roman Empire**, came to an end, 2530  
 Charlemagne crowned emperor, 3014  
 formation, 2524  
 government of Switzerland, 2964  
**Holy Sepulchre**, Christ's grave, 1587  
**Homer**, life and writings, 67, 93, 5121, 5217; pictures, 67, 5127, 5217  
**Homer**, Winslow, life and art, 4151  
**Homer pigeon**, and picture, 2213, 2215  
**Home rulers**, what they require, 1096  
**Homes**, of man in all ages, picture, 621  
**Honduras**, flag, picture in colour, 1640  
 independent republic, 4392  
 Spain founded colonies, 4383  
**Honest man**, how a sultan found an honest man, story, 2745  
**Honesty**, do the wicked nearly always triumph in the world, 5687  
 plant, may be sown in May, 3278  
**Honey**, how the ant gets honey, 2947  
 how we get it, pictures, 2819  
**Honey-ant**, stores honey, 2948  
**Honeycomb**, how it is made, and pictures, 2818, 2819  
**Honeymoon**, how the custom arose, 1370  
**Honeyuckle**, bush: see Diervilla  
 glaucous, 4839  
 how it gets its name, 5116  
 how it guards its nectar, 3786  
 its flower, 3961  
 pictures, 3735, 4611, 4832  
**Hong Kong**, British possession, 116, 1879  
**Honorus, Emperor**, and his fowls, 2301  
**Honshu**, part of Japan, 370  
**Hood, Gen'l John B.**, takes over Gen'l Johnston's command, 2020  
**Hood, Thomas**: see also Poetry Index  
 wrote Song of the Shirt, 1621  
**Hooded seal**, 1090  
**Hoogli River**, in India, 1548  
**Hooker, Robert**, made sound travel along a wire, 4317  
**Hooker, Joseph**, at Chancellorsville, 2016  
 picture, 2017  
**Hooker, Sir Joseph**, and chickweed, 3523  
**Hook of Holland**, landing-place, 3456  
**Hoop**, some hoop games, 4027
- Hooper, Bishop**, died for his faith, 5068  
**Hoopoe**, bird, and picture, 1741, 1748  
**Hop gardens**, pictures, 3896  
**Hopi**, Indians of Arizona, with pictures, 3683  
**Hopkinson, Francis**, author of the Battle of the Kegs, 2965  
**Hopkinson, Joseph**, author of Hail Columbia, 2366  
**Hop-o'-my-thumb**, story, and pictures, 1973, 1975  
**Hop-scotch**, game, and picture, 3920  
**Hop, skip, and a jump**, game, 3614  
**Hopson, Sir Thomas**, his youth, 4333  
**Horace**, great poet, 528, 5218, 5266  
 picture, 5216  
**Horatius**, saved Rome, 1408  
**Horshound**, picture, 3831  
**Horison**, how its distance alters, and picture, 2332  
**Horn, Count**, story of his death, 5171  
**Horn, Cape**, south of South America, 4497  
**Hornbeam**, description, 5442  
 picture, 5441  
**Hornbill**, bird, and picture, 1746  
**Horned lizard**, picture, 1228  
**Horned pheasant**, picture, 1516  
**Horned poppy**, 4110  
**Horned toad**, 1220; picture, 1228  
**Horned viper**, with picture, 1379, 1380  
**Hornet**, picture, face 1140  
**Hornet, the**, and Peacock, 1398, 2902  
**Hornocks, Jeremiah**, observed the transit of Venus, and pictures, 1661  
**Horse**, and the ass, fable, 2849  
 burdening horses, 3235  
 cruelty of bearing-reins, 158, 159  
 different kinds of horses, 270  
 disappearance of, 5570  
 do a horse's eyes magnify? 5381  
 drawing a horse from squares, 1073  
 fox and horse, story with picture, 967  
 hoax concerning, 5309  
 horse and the groom, fable, with picture, 1793  
 horseshoes, 742  
 how long a horse lives, 2328  
 how to draw a spirited horse, with picture, 3726  
 man-eating horses, 5164  
 mare and foal, 5479  
 never forgets its former home, 5411  
 the first horse had toes, 50, 1988  
 what it was like long ago, 48, 270  
 why a horse follows his master's funeral, 5650  
 why they have hair, and sheep wool, 3236
- Pictures of Horses**
- dray-horse, 271  
 horse with and without bearing-rein, 159  
 horse with its foal, 3892  
 how it has developed, 3681  
 how the horse's shoe is made, 742, 743  
 teeth of a horse, 3045  
**Horsebot**, 3262; picture, 3267  
**Horse chestnut**, pictures, 1970, 3653  
**Horsefly**, and picture, 3147  
**Horse rake**, invented, 2668  
**Horseshoe card problem**, pictures, 4667, 4778  
**Horseshoe Fall**, a fall of Niagara, 680  
**Hosmer, Harriet**, sculpture of, 4846  
**Hottentots**, live in Africa, 1768  
**Houdon, Jean Antoine**, sculptor, 4162  
 statue of Geo. Washington, 4841  
**Houghton, Lord**: see Poetry Index  
**Hound**, the old hound, fable, 3124  
**Hour-glass**, pictures, 1538  
**House**, houses of Polynesia, pictures, 1465  
 how a house is built, picture, 2557  
 how to draw a house, 4039  
 what the skeleton of a house is, 622  
 why houses seem crooked when seen above a fire, 2230  
 why it becomes dusty, 4748  
**House cricket**, 3141; picture, 3078  
**House-fly**, 4216, 3260  
**House-leek**, as a rosette, picture, 3976  
**House paper-chase**, game, 2572  
**House-spider**, picture, 3299  
**House-wort**, lives on other plants,  
**How, Wm. Walsham**, and his hymns, 1996  
 portrait, 1999  
**Howard, Alice G.:** see Poetry Index



# INDEX

- Howard, John**, 3698; picture, 3701  
**Howe, E.**, invented sewing-machine, 1622  
**Howe, General William**, . attacked General Washington, 986  
 hanged Nathan Hale, 3811  
 portrait, 981  
 takes Philadelphia, 988  
**Howe, Julia Ward**, author of Battle Hymn of the Republic, 2956  
 life, 2048  
 picture, 2043  
 see Poetry Index  
**Howe, Lord**, commander of British fleet, 986  
**Howitt, Mary**; see Poetry Index  
**Howitt, William**, author, 348  
 poems: see Poetry Index  
**Howler**, a monkey, 606  
**How many miles to Babylon?** game, 4144  
**How, when, and where?** game, 237  
**Huckleberry**, description, 4488  
 flowers, picture, 4488  
**Hudson, Henry**, 267; discoverer, 1246, 4722; pictures, 261, 1248, 4725  
**Hudson Bay**, English settled there, 1247  
**Hudson River**, explored by Henry Hudson, 267  
 first seen by Verrazano, 262  
**Hudson River School**, of painters, 4149  
**Hudson's Bay Company**, 1247, 2728; granted exclusive privilege of trading, with pictures, 5147  
**Hudson's Bay Company**, organisation, 5154  
 purchase of its rights by Canada, 4104, 5150  
**Huggins, Sir William**, astronomer, 2862  
**Hughes, Thomas**, his book, Tom Brown's Schooldays, 4063  
**Hugo, Victor**, fight with a cannon, an extract, 5593  
 his book, The Tollers of the Sea, 4171  
 Les Miserables, extract from, 5362  
 life and writings, 5221; portrait, 5217  
 likens the soul of man to a pool, 212  
 poems: see Poetry Index  
**Huguenots**, allowed liberty of worship, 2070  
 allowed religious freedom in Canada, 3619  
 escaped from France, 2072  
 in South Carolina, 262  
 persecuted in France, 2068, 2070  
 Protestants, 1654, 1734  
**Hull, General William**, surrendered at Detroit, 3901  
**Hull, Isaac**, commander of the Constitution, 2901  
**Hull House**, started by Jane Addams, 3064  
**Hulls, Jonathan**, his steamboat, and picture, 2468, 2469  
 portrait, 2467  
**Humayan**, king of Hindustan, and portrait, 1702  
**Humble bees**, 45; picture, face 3140  
**Humboldt, Friedrich**, life, 853; with portrait, 851  
 on forests, 3650  
 made surveys in S. America, 4505  
**Hume, David**, a friend of Adam Smith, 216  
 friend of Rousseau, 5221  
 his life, 4679  
 portrait, 4675  
**Hume, Grisel**, brave Grizel Hume, 5615  
**Hume, Sir Patrick**, a covenant, 5615  
**Humerus**, bone of the upper arm, 2545  
**Humming-bird**, its life-story, 665, 1739  
 nest of Californian, picture, 5417  
 what it was once like, 48  
**Humming-bird moth**, 3408  
**Humus**, decayed vegetable matter, 3830  
**Hunchback**, and the fairies, story, and pictures, 1106, 1107  
**Hundred Days**, The, what they were, 2576  
**Hundred Years' War**, 2067  
**Hungary**, defeated by Turkey, 3154  
 efforts for freedom, 124  
 history, 2576, 2854  
 Hungarians, picture, 3225  
 ice-cavern, 2860  
 joined to Austria, 2530  
 Turks driven out, 3158  
**Hunger**, is the best sauce, proverb, 5126  
 what it is, 156, 3112, 3433  
 why we do not growl when hungry, 4599  
**Hungerford Bridge**, pulled down, 26  
**Hungry Forties**, what were the, 5644  
**Huns**, invaded Europe, 2522, 3933  
 pillaging a Roman villa, picture, 2523  
**Hunt, Leigh**; see Poetry Index  
**Hunt, William Morris**, life and art, 4150  
 picture by, 4158  
**Hunter, John**, life, 4200; portrait, 4195  
**Hunter, William**, died for his faith, 5068  
**Hunter and the hare**, rhyme, and pictures, in colour, 4692  
**Hunting spider**, its prey, 3303  
**Hunt the ring**, game, 2571  
**Hunt the slipper**, game, 2571  
**Hunt the stag**, game, 4027  
**Hunyadi, John**, fought against the Turks, 2854, 3154  
**Huron, Lake**, in Ontario, 1240  
**Huss, John**, painter, 1109  
**Huss, John**, reformer, persecuted, 2528, 3154, 2576  
**Hutchinson, Mrs. Lucy**, her heroism at Nottingham Castle, 3471  
**Huxley**, found traces of a reptile in a rock, 2886  
 his life, 858; portrait, 851  
 what he said about fossils, 2883  
 what he said of Carlyle's writings, 218  
**Hwang-ho**, river in China, its floods, 106  
**Hyacinth**, different kinds, 5272  
 grape, 5272  
 how to grow in glasses, and picture, 1716  
 how to treat, 1610  
 hyacinths grown in a bowl, picture, 1816  
 origin of, 5272  
 picture, in colour, 3727  
**Hyde, Anne**, wife of James II., 2382  
**Hyde, Edward**, Earl of Clarendon, his life, 1888, 2382; portrait, 2379  
**Hyde Park Corner**, Burton's arch, and picture, 5003, 5004  
**Hydra**, slain by Hercules, 3314, 5163  
**Hydrangea**, 658; picture, 830  
**Hydroiodic acid**, 1797, 1801  
**Hydrobromic acid**, how it is formed, 1797  
**Hydro-carbons**, what they are, 1870  
**Hydrochloric acid**, a strong acid, 1801  
 how it is produced, 1667, 1797  
 its graphic formula, 1798  
 produced in the stomach, 2344, 2698  
**Hydrocyanic acid**: see Prussic acid  
**Hydrogen**, can be liquefied, 4050  
 contained in comets, 2499  
 exists in stars, 2427, 2719  
 exists in the sun, 2088  
 forms acids, 1797  
 gives the most heat, 3757  
 much lighter than air, 3816  
 one of its uses, 914  
 what kind of element it is, 1193  
**Hydrogen gas**, its specific heat, 4475  
**Hydrometer**, tells the specific gravity of liquids, and picture, 3815, 3817  
**Hydrophytes**, class of plants, 5031  
**Hydroxides**, what they are, 1800  
**Hydroxyl**, its formula, 1800  
**Hyena**, 50, 142; pictures, 51, 138  
**Hygrometer**, what it is, 3922  
**Kylos**, kings of Egypt, 4786  
**Kymn**, a form of lyric poetry, 343  
 writers of the hymns, 1995  
**Hypnotism**, 5170, 5135  
**Hyraz**, what it is, and picture, 995

## I

- Iamby**, a court fool, 4278  
**Iberian Peninsula**, history and geography, 3351  
 what it is, 3011  
**Iberians**, conquered by the Romans, 335  
**Ibex**, goat, with picture, 380, 381  
**Ibis**, sacred bird, 1958; picture, 1953  
**Ice**, can be cooled and heated, 4048  
 ice cavern in Hungary, 2860  
 is solid water, 359  
 its specific gravity, 3816  
 kept cold by flannel, 682  
 lighter than water, 3036  
 shrinks as it cools, 4229  
 weight, 4339  
 why it is slippery, 3092  
 why it turns liquid when heated, 4825

# INDEX

- Ice Age**, effect on mountains, 3228  
how it destroyed the animals, 50  
in America, 12  
may come again, 2073
- Icebergs**, how they are formed, 3228  
their size, with pictures, 4228, 4229
- Ice Haven**, discovery by Barents, 4722
- Iceland**, belongs to Denmark, 3598  
Norsemen settled in, 3592
- Iceland spar**, 5173; with picture, 5178
- Ices**, how to make without a freezer, 3915  
why a cup containing ice cream gets wet outside, 3096  
why too many ices are bad, 4052
- Ichnemnon fly**, 2990, 3256  
pictures, face 3141 and 3257
- Ichthyosaurus**, 48, 2884; picture, 44
- Ictinos**, helped to build Acropolis, 5128
- Ida**, little Ida's flowers, story, with pictures, 3505
- Idaho**, admitted, 3537
- Idol, The**, rock, picture, 1058
- Iduna**, and the golden apples, story, with picture, 3581, 3582
- Ightham Moat**, picture, 2457
- Igneous rocks**, are made by fire, 3035
- Ignis fatuus**, the will-o'-the-wisp, 3542
- Igorrotes**, origin of, pictures, 2182, 2186-87
- Iguana**, a lizard, with picture, 1219, 1225
- Iguanodon**, a lizard, 48; picture, 44
- Iguazu Falls**, and picture, 4499
- Iktagame temple**, picture, 371
- Ikons**, what they are, 3750
- Ilfracombe**, what name means, 5388
- Ilíad**, the story of, 67, 5121
- Illinois**, admitted, 1824, 3534
- Illness**, what the pulse tells us, 4344  
why damp air makes us ill, 4595  
why we do not get some illnesses twice, 2454
- Illusion**, dancing dwarf, 5667
- Illyria**, a country, 475
- Ilmen**, lake in Russia, 3750
- I love my love**, game, 237
- Imitation**, influence on actions, 5135
- Immigrants**, begin coming to America, 3535
- Imp**, with a disappearing head, trick, with picture, 3388
- Imponderabilia**, things that cannot be weighed, 4048
- Ina**, king of Wessex, story, 2302
- Incaendescant light**, came into use, 657
- Incas**, legends about, 4504  
their conquest by Pizarro, 4502
- Incisors**, the flat front teeth, 2098
- Incubator**, hatches eggs, 1514, 2229
- India**, a farmer and a warrior, 1701  
animals, 1545  
climate and physical features, 1545, 1546  
England at war with natives, 1704  
England traded with India, 1702  
finding the way by sea, 59  
French and English at war, 1094, 1704  
how it became a British possession, 1702  
how the British rule in, 1552  
its history, 1699  
its trees cut down, 3650  
our tea chiefly comes from, 88  
people and religion, 1550, 1699, 1700  
size and population, 1545  
stories told there 3,000 years ago, 5421  
towns and buildings, 1548  
why it is hotter than England, 1060
- Pictures**
- a rope bridge, 31  
flag of India, in colour, face 1640  
home life of the people, 1547  
maps, 1544, 1699, 1875  
native soldiers, 1699  
old and new rulers, 1698  
the splendour of travelling in India, 1705
- Indians**, admitted, 1824, 3534
- Indian-bean tree**: see Catalpa
- Indian cattle**, picture, 369
- Indian hunter** (the), picture of, 4847  
statue, 4846
- Indian leaf butterfly**, picture, 3409
- Indian Mutiny**, broke out, 1098, 1706  
tales of, 1913  
the noble Sikh in, 2547
- Indian race**, a game, 4242
- Indian ray**, picture, 2449
- Indian red**, a colour used in painting, 3497
- India-rubber**, comes from trees, 683  
how it is prepared, 3543  
where it comes from, 3542  
why it removes pencil marks, 3095
- See also Rubber**
- Indians, American**, as fur-trappers, 5152  
Blackfeet, 4578  
Botocudo Indians, primitive habits, 4503  
with picture, 5102  
Crees returned to Canada, 4578  
description, 14  
exhibits concerning, 4901  
feast of, 264  
how to make an Indian from straw, with picture, 5102  
in Canada, 1242, 1246, 3618  
Indian gave life to save others, 3108  
Iroquois incensed at the French, 3620  
legends, 1063, 3313  
medicine men of Winnebagoes, 1829  
natives of America, 1877, 4384  
of the Painted Desert, with pictures, 3683  
pictures, 4242, 4571  
wars of: see Battles: Colonies: French and Indian War: United States: Wars
- See also Aztecs; Five Nations; Iroquois Indians; Six Nations**
- Indigo**, a colour used in painting, 3497
- Indo-China**, belongs to France, 2400
- Indus River**, flows through the Punjab, 1546  
its size, 1545  
rises in Tibet, 3936
- Inertia**, what it is, 2879, 3469
- Infection**, is carried by germs, 3972
- Infernal machine**, first made, 4227
- Infusoria**, how important they are, 3677  
how they multiply, 2335
- Ingelow, Jean**: see Poetry Index
- Ingoldsby Legends**, by Barham, 2647
- Injury**, body's effort to repair, 5642
- Ink**, how to make for a hectograph, 1287  
how to make invisible inks, 1287  
how to remove ink-spots, 4456  
is carried by some fish, 2452  
on wood, 5666  
why it stains, 5169  
why it writes better on paper than on a slate, 1641
- Inkerman**, battle of, 3632
- Inness, George**, life and art, 4151  
picture by, 4155
- Innocent III**, a pope, 4715, 4946, 4948  
picture, 3359
- Inn River**, 2856, 2960
- Innsbruck**, 2854; picture, 2859
- Inquisition**, what it was, 1660, 3356  
established in the Netherlands, 3460
- Insects**, how numerous they are, 2815  
how they protect themselves, 3407  
how to get rid of in the garden, 3726  
in natural colours, picture, face 3141  
some foes of man, 3139  
some friends of man, 3255  
talk to each other, 1269  
that pretend to be plants, picture, 3409  
their eyes, 3260, 4215  
their homes in growths on trees, 2460  
their power of hearing, 5021  
useful to plants, 38  
what they are, 547  
why they visit flowers, 3734
- Inspiration**, is breathing in, 1637
- Instep**, how it is formed, 2548
- Instinct**, how it decides actions, 5132  
is very useful, 4233  
power of, in animals, 4549
- Instruments**, barometer made at home, 5447  
musical, made out of old bottles, 5448  
periscope, 5588  
phonograph, 5695  
telephone that a boy can make, 5528
- Interest**, is necessary to thought, 1366, 5026
- Interior, U. S. Department of**, what it is, 1597
- Interlaken**, picture, 2993
- In the Days of the Comet**, extract from, 5509
- Intra-molecular**, what the term means, 1633

# INDEX

- Invalides, Hôtel des**, description, 5338  
**Inventor**, American inventors and inventions, 2667  
 how he thinks, 4942  
 thinking out problems, picture, 652  
**Inversely**, what is meant by varying inversely, 4320  
**Inverse squares**, the law of, 2504  
**Invertebrates**, animals without a backbone, 664, 2437  
**Involuntary muscle**, 2626  
**Iodine**, shows if starch is present, 2696  
 what it is, 3093  
**Ionians**, a Hellenic tribe, 5124, 5126  
**Iowa**, admitted, 1836, 3535  
**Iquitos**, town, 4498, 4567  
**Ireland**, a present to Henry II., 594  
 birds-eye view of, 5462  
 description of, with pictures, 5457  
 Henry VIII. tried to settle Ireland, 845  
 Richard II.'s reign in, 752  
 rose in favour of Charles I., 1025  
 Ulster settlers, 1022  
 union with Great Britain, 1094, 1639  
**Irton, Henry**, how Charles II. treated his body, 4640  
 picture, 1896  
 was a great man in the Commonwealth, 1026  
**Iris**, flower, different kinds, 5272  
 is part of the eye, 3434  
 means rainbow, 6116  
**Irish burnet moth**, picture, in colour, face 3141  
**Irish elk**, 382  
**Irish flag**, the story of, 3233  
**Irish Sea**, 192, 194  
**Irkutsk**, has gold-smelting works, 3752  
**Iron**, bridges made of cast iron, 19  
**Iron**, can a piece get tired? 5498  
 can be bent when heated, 3757  
 gets tired, 3977  
 heat travels along an iron bar, 1061  
 in Canada, 5600, 5601  
 iron sinks, 685  
 is found in meteors, 2560  
 is in the sun, 2088  
 is necessary to life, 1385  
 is the most valuable metal, 1292  
 it can float on mercury, 3767  
 its specific gravity, 3816  
 loses weight when it rusts, 3235  
 manufacture of, 5537  
 moved by magnets, 5471  
 production of in U. S., 8680, 2662  
 stains cliffs brown, 3339  
 Swedish iron is good for steel, 3600  
 wastes slowly with fire, 4822  
 where ore is found, 5539  
 why an iron ship floats, with picture, 685  
 why iron rusts, 1776  
 why it feels colder than wood, 3382  
 why it turns red when hot, 3545  
 will not rust in Lake Titicaca, 4572  
**Iron Age**, 622, 1292  
**Ironsides**, Cromwell's army, 1024, 1888  
**Iron-wood**: see Hornbeam  
**Iroquois Indians**, 1247  
 exhibit of, with pictures, 4906  
**Irradiation**, how it affects the eye, 2879  
 what it means, 3382  
**Irving, Sir Henry**, Columbus sees America, an extract, 5506  
 Knickerbocker History of New York, an extract, 2245  
 picture, 4158  
 portrait bust of, 4844  
**Irving, Washington**, 1476: portrait, 1475  
**Isaac**, names derived from, 4752  
**Isabella**, at the siege of Granada, 3356  
 married Ferdinand of Aragon, 3356  
 offering her jewels, picture, 2367  
 of Spain, and Columbus, 56, 58  
 stories of her goodness, 2367  
**Isabella**, wife of Edward II., 2533  
**Isinglass**, what it is made from, 201  
**Island**, how it is formed, 3004  
**Island No. 10**, surrendered, 2013  
**Island Range**, partially submerged, 5611  
**Isle of Man**: see Man, Isle of  
**Isle of Wight**: see Wight, Isle of  
**Ismail**, became Shah of Persia, 3580  
**Isolt**, the story of her life, 3211  
**Ispahan**, 3890, 3881; picture, 3877  
**Issus**, Persians defeated at, 1306  
 pictures, 5059  
**Istria**, is a port of Austria, 2860  
**I spy**, game, 574  
**Italy**, became one nation, 124, 3024  
 destruction of Pompeii, 5314  
 flag, with picture, in colour, 1640  
 its history, 3012  
 its possessions in Africa, 4262  
 its progress, 3024  
 its shape and position, 3011  
 its towns, 3014  
 map of, picture, 3013  
 physical features, 3012  
 southern Italy added to the German states, 2527  
 story of Italy under the Austrians, 1654  
 the seat of the new learning, 3156  
 was invaded by Napoleon, 2274  
 why is its sky bluer than ours? 5384  
 won by the Romans, 5262, 5266  
**Ithaca**, the kingdom of Ulysses, 70  
**Ivan III.**, of Russia, married a Greek, 1640  
 was a powerful ruler, 3626  
**Ivan IV.**, of Russia, 3626  
**Ivanhoe**, story of the novel, with picture, 1645, 1647  
**Ivory**, from elephant's tusks, 274, 2098  
 is got from prehistoric animals, 3752  
**Ivory Castle**, the princess of, story, 2092  
**Ivory Maiden**, who came to life, story, 963  
**Ivy**, has flat flowers, 3736  
 pictures, 734, 1453  
 why it clings to walls, 159  
 will grow in water, 2664  
**Ivy-leaved geranium**, 830; picture, 5275  
 See also **Ground-ivy**; **Poison-ivy**  
**Iwakuni Bridge**, with picture, 31

## J

- Jacana**, a bird, 1958  
**Jack**, the luck of simple Jack, story, 2740  
**Jack**, a coat worn by sailors, 2333  
**Jackal**, picture, 134  
 stories about, 5349, 5350  
 what it is like, 142  
**Jack and the Beanstalk**, story, with pictures, 3159  
**Jack-by-the-Hedge**: see Hedge-garlic  
**Jack Cade** **Rebellion**, leader of, 5524  
**Jackdaw**, and pigeons, fable, with picture, 3852  
 builds in high buildings, 1848  
 pictures, 1744, 1847  
 the vain jackdaw, fable, with picture, 877  
**Jackson, A.**, administration, 3534  
 as president, 1828  
 defence of New Orleans, 1400  
 life, 792  
 picture, 787, 3532  
 portrait bust, pictured, 4843  
 suppressed Creek uprising, 1399  
**Jackson, F. S.**, his journey to Franz Josef Land, 4724, 4726; picture, 4725  
**Jackson, General**, his clever horse, 272  
**Jackson, Helen Hunt**, life, 2047  
 See also **Poetry Index**  
**Jackson, Hughlings**, discovery, 244  
**Jackson, T. J.**, at Bull Run, 2016  
 in the Shenandoah, 2014  
 killed, 2016  
 nickname "Stonewall" given to, 2013  
 picture, 2011  
 saved Richmond, 2016  
**Jackson Monument**, by Clark Mills, 4844  
**Jack the Giant Killer**, story, with pictures, 1794  
**Jacob**, little Jacob's friend, story, with picture, 3164  
**Jacob Faithful**, the story of the book, with picture, 2197  
**Jacobin**, pigeon, has a hood, 2215  
**Jacobins**, in France, 4060  
**Jacobite Rebellion**, second, 1496  
**Jacob's Ladder**, mysterious, 5667  
**Jade stone**, comes from Turkestan, 3934  
**Jaguar**, with picture, 138, 140  
**Jainism**, what it teaches, 2996  
**Jain temple**, at Ahmedabad, picture, 2997

# INDEX

**Jain temple**, at Calcutta, picture, 2231  
**Jamaica**, is a British island, 1877  
 taken by the English, 1027  
**Jamaican humming-bird**, 1740  
**Jamel**, the Saxon, built a church, 1321  
**James I.**, of England, became king of England, 848, 2535  
 helped the German Protestants, 2528  
 his father and mother, 846  
 his reign, 1021  
 married Anne of Denmark, 3596  
 picture, 2710  
 was James VI. of Scotland, 3088  
**James II.**, of England, 1024  
 escaping after the battle of the Boyne, picture, 1027  
 ruled badly, 2535  
 was deposed, 1029, 2708  
 was helped by Louis XIV., 2070  
**James III.**, of England, 1028  
**James I.**, of Scotland, his reign, 3096  
 prisoner, 754  
 how he was slain by traitors, 240  
**James II.**, of Scotland, his reign, 3086  
**James III.**, of Scotland, presented to the nobles, picture, 3083  
**James IV.**, of Scotland, his reign, 3086  
 marriage, 842  
 was killed at Flodden, 846  
**James V.**, of Scotland, 846, 3086  
**James, Professor**, on sight and hearing, 4822  
**Jamestown**, colony of, 516

## See also Virginia

**Jam-jar**, how to draw, picture, 973  
**Jane Seymour**, mother of Edward VI., 845, 2534  
**Janissaries**, are Turkish troops, 3156  
 murdered the Servians, 3222  
 mutinied, 3158  
**January**, what name means, 4515, 4533  
**Janus**, god, with picture, 4515, 4533  
**Japan**, at war with China, 368  
 description of, with pictures, 5557  
 dress and houses, 372  
 dwarf trees grown in, 2079  
 earthquakes in, 3232  
 in Hawaii, 2182  
 its festivals, 364, 374  
 its flowers and trees, 368  
 its history and geography, 363  
 its industries, 372  
 its people, 365  
 its towns, 370  
 looking-glass discovery, story, with picture, 5161  
 pictures, scenes, 5557-5565  
 Shinto temple, 371  
 the children of Japan, 254, 374  
 the sacred mountain, 370  
 the soldiers' food, 2700  
 treaty with, 3536  
 war with Russia: see Russo-Japanese war  
 what Marco Polo said of it, 366

## Pictures of Japan

dwarf trees, 2079  
 emperor of Japan, 363  
 flag of Japan, in colour, 1640  
 map of Japan and China, 365  
 scenes of life, 367, 369, 371, 373  
**Japanese anemones**, 5270  
**Japanese chrysanthemums**, 573  
**Japanese lily**, 5271  
**Japanese midgets**, are small fowls, 1513  
**Japan Sea**, 363, 3752  
**Jar**, story concerning a, 5344  
**Jarnac**, where a battle was fought, 1654  
**Jason**, and Golden Fleece, 185; picture, 186  
**Java**, the, and the Constitution, 1398, 2902  
**Java sparrow**, 1746; picture, 1742  
**Jay**, bird, and picture, 2206, 2211  
**Jeanne**, the brave little mother, story, 321  
**Jeanne d'Albert**, queen of Navarre, 1654  
**Jefferson, Thomas**, administration, 3533  
 as president, 1394, 1396  
 enemy of slavery, 2008  
 life, 786, 790  
 portraits, 787, 987, 1391, 1396, 3852  
**Jehan Ghr**, a king of India, 1702  
**Jehu**, his tribute to Shalmaneser II., 4978  
**Jellyfish**, a low form of life, 1410, 2341

**Jellyfish**, picture, 1414, 1417  
**Jena**, battle of, 3631  
 where telescopes are made, 2752  
**Jenghis Khan**, his conquests, 3934  
 ruled over a great empire, 110  
**Jenner, Edward**, his life, 4200  
 introduced vaccination, 2459, 2799  
 picture, 4196  
 poems: see Poetry Index  
**Jenny Wren**, picture, 2065  
**Jerboa**, animal, 670; picture, 671  
**Jerfalcon**, a well-known falcon, 1846  
**Jerome, St.**, his life, 3982  
 pictures, 3981, 3989  
**Jerusalem**, conquered by Titus, 531  
 part of Cross taken by Persians, 3152  
 taken by Nebuchadnezzar, 4983  
 taken by the Seljouk Turks, 3154  
 the siege by the Crusaders, 1588  
 was taken by the Saracens, 1589, 3152  
 won back from Syria, 117  
**Jervis, John**: see St. Vincent, Earl of  
**Jesuits**, how they work, 3990  
 preached Christianity in China, 112  
**Jesus Christ**, actual birthday of, 5524  
 birthplace unknown, 5383  
 how His teaching spread, 3874  
 legends of, 1677  
 piece of Cross taken by Persians, 3152  
 the story of the likeness of, 4700  
 was born in the time of Augustus, 528  
 what Christians believe, 1552

## Pictures of Jesus Christ

**Jesus and His mother**, by Raphael, 761  
**Jesus** and the tribute money, by Titian, 761  
**Jewel-wood**, picture, 4838  
**Jewett, Sarah Orne**, life, 2048  
**Jews**, carried into captivity, 4978, 4983  
 rebelled against Syria, 117  
 were slaves of the state, 2910  
**Jiddah**, the port of Mecca, 3876  
**Jilloffer**, name of ten-week stocks, 5276  
**Jimmu**, emperor of Japan, 364, 370  
**Jimson-weed**: see Thorn-apple  
**Jingling**, game, 5000  
**Jingo**, Japanese empress, 364, 370  
**Jirriksha**, and picture, 370  
**Joan**, countess of Brittany, and picture, 2478  
**Joan of Arc**, incited French against English, 754  
 pictures, 119, 121, 126  
 saved France, 120, 2068  
 statue on the Seine, 2399  
**Joanna**, of Spain, her son became Charles I. of Spain, 3356  
 married Philip of Austria, 3460  
**Joao**, king of Portugal, 3168  
**Joceline**, and the little black man, story, and picture, 4928  
**Joe-Pye-weed**, description, 5190  
 picture, 5187  
**Jogues, Father**, Jesuit missionary, 880  
**Johannesburg**, picture, 1767  
**Johansen, Lieutenant**, his expedition with Nansen, 4726  
**John**, king of England, a wicked king, 2704  
 did not sign Magna Carta, 5524  
 plotted against his brother, 2533  
 signed Magna Carta, 598  
 signing Magna Carta, picture, 597  
**John III.**, king of Poland, defeated the Turks, 2528, 3158  
 rescued Vienna, 2850  
**John XXIII.**, pope, 4948  
**John**, don of Austria, 3157  
**John**, of Gaunt, friend of Chaucer, 3328  
**John**, names derived from, 4752  
**John Brown's Body**, history of song, 2956  
**John Brown's Raid**, 2008, 3536  
**John Bull**, his picture, 2331  
 how the nickname arose, 2330  
**John Chinaman**, made of pea-nuts, with pictures, 450  
**John Damascene, St.**, 1995  
**John Halifax, Gentleman**, the story of the book, 3923; with pictures, 3927  
**Johnson, Andrew**, as president, 2024  
 impeached, 2024  
**Johnson, Eastman**, life and art, 4149

# INDEX

**Johnson, Samuel**, his life, 4678  
how he sold Goldsmith's manuscript for him, 1732  
pictures, 213, 4675, 4681  
reading Vicar of Wakefield, picture, 1731  
remarks on American rights, 982  
what he said of Burke, 216  
what he said of Goldsmith, 1732  
what he said of Rousseau, 211  
**Johnson, Sir William**, influence with Indians, 880  
**Johnston, Albert Sidney**, career and death, 2013  
**Johnston, Joseph E.**, army of, 2014  
in command Confederate army, 2018, 2022  
picture, 2011  
retreat of, 2020  
surrenders, 2022  
**Johnston, Mary**, life, 2049  
**Johnston, Sir Harry**, brought a chimpanzee to England, 602  
tried to find an okapi, 1000  
**Joints**, how fished joints are made, 1511  
how the joints of the head and limbs are formed, with picture, 2543  
making simple joints in wood, with pictures, 1345  
more wood joints, with picture, 1510  
**Joliet, Louis**, exploration of Illinois, etc., 264  
visited site of Chicago, 5513  
**Jolly miller**, the, how to play it, 3614  
**Jones, Imgo**, influenced by Palladio, 1254  
**Jones, Jacob**, commander of the Wasp, 2902  
**Jones, John Paul**, battles of, 2898  
given commission in American Navy, 2898  
gives advice to the Continental Marine Commission, 2897  
irregular navy of, 990  
picture, 2899  
**Jones, Mary**, how she got the Bible, 2548  
**Jonquil**, flower, 5116, 5272  
**Jonson, Ben**, a great poet, 2151  
poems: see Poetry Index  
**Jordan River**, in Palestine, 3874  
**Jorullo**, a remarkable volcano, 4386  
**Joseph**, in Egypt, 4786  
in Egypt, 4786  
**Joseph of Arimathea**, and the Holy Grail, 871  
**Joseph of the Studium, St.**, wrote hymns, 1995, 1996  
**Josephine**, Napoleon's wife, 2276  
**Jostedal glacier**, picture, 3599  
**Jouffroy, Marquis de**, said to have made first steamboat, 2468  
**Joule, James Prescott**, what he proved about heat, 4366  
**Jourdan, Jean Baptiste**, Napoleon's marshal, 4362  
**Journal of the Plague Year**, extract from, 5596  
**Jove**: see Jupiter  
**Joy, George William**, his pictures, Lear and Cordelia, 633  
Joan of Arc resting after a fight, 119  
Nelson about to join his first ship, 4357  
Wellington at a French school, face 4355  
**Joyce, Cornet**, was sent to Holmby House, 1889  
**Juarez, B. P.**, president of Mexico, 4390  
**Judas Maccabæus**, delivered Jews, 117  
**Judge**, who imprisoned a prince, story, and picture, 4830  
**Juggernaut**, a god of the Hindoos, 1550  
**Jugglers**, the cleverest are Indians, 1378  
**Julian**, the Apostate, addressing Christians, picture, 3151  
conquered by Sapor II., 5066  
tried to restore pagan worship, 3151  
**Julier Pass**, had a Roman road, 2962  
**Julius II.**, pope, built St. Peter's, 4948  
invited Raphael to Rome, 4952  
tomb made by Michael Angelo, 4952  
**Julius Cæsar**, Antony's speech, picture, 4518  
came to Britain, 195, 196  
carried in triumph, picture, 4518  
condemning Vercingetorix, picture, 418  
his book on Gallic War, 5266  
his conquests, 5265  
gave July its name, 4519, 4533  
most famous of the Romans, 420  
started written history of Gauls, 2063  
the death of, picture, 418

**July**, how it got its name, 4519, 4533  
**Jumbo**, famous elephant, 275  
**Jumping beans**, what they are, 2459  
**June**, how it got its name, 4518, 4533  
**Jungfrau, The**, a peak in the Alps, 2960  
**Junks**, are Chinese boats, 115  
**Juno**, goddess, changed Callisto into a bear, 3314  
claimed golden apple, 1683  
picture, 4518  
temple of, 554  
was the queen of the Roman gods, 4563  
was the wife of Jupiter, 4518  
**Jupiter**, god, and the ass, fable, 3310  
drove out Discord, 1683  
changed Callisto into constellation, 3314  
gave the frogs a king, 462  
**Jupiter**, planet, Galileo discovered Jupiter's moons, 147  
gets in the way of comets, 3095  
has tides, 2280  
how it got its name, 2234  
how its surface moves, 2084  
is small compared with the sun, 1944  
is still hot, 1367  
is too hot to bear life, 3437  
moons, or satellites, 150, 3032  
the planet, 147  
what is known about it, 2428  
**Jura Mountains**, 2392, 2990  
**Justinian, Emperor**, 1812, 2911, 3152  
**Jutes**, a people, came to England, 427  
**Jutland**, is a peninsula, 3592

## K

**Kaaba**, temple, 3876; picture, 3001  
**Kabul**, Lord Roberts' march, 3938  
the British retreat from, 3938  
picture, 3935  
**Kaffirs**, compound, picture, 1764  
employed in gold mines, 5302  
pictures, 1764, 1767  
**Kaiser-Wilhelm Canal**: see Kiel Canal  
**Kaka parrot**, picture, 1743  
**Kakapo**, bird, 1430; picture, 1431  
**Kalakaia**, king of Hawaii, 2181  
**Kaleidoscope**, how to make, with picture, 339  
**Kalmia**: see Laurel, mountain  
**Kalmucks**, tribe, and picture, 3939  
**Kamchatka**, explored by Behring, 3630  
**Kamera**, the proud king, story, 1525  
**Kandahar**, Lord Roberts' march, 3938  
**Kangaroo**, different kinds, 862  
its life-story, 860  
lives in Australia, 50, 1364  
pictures, 51, 863  
protection of young, 5479  
**Kangaroo rat**, is a small kangaroo, 862  
**Kansas**, admitted, 1836, 3536  
fighting in, 3536  
organised as territory, 2009, 3536  
**Kansas-Nebraska bill**, introduced by Stephen A. Douglas, 2009  
**Kant, Immanuel**, his life and teaching, 4622  
pictures, 4623, 4625  
theory on nebulae, 2862  
**Kaoilin**, a white clay, 372, 2396  
**Kapiolani**, heroine of Southern Seas, 2491  
**Kaptean, Professor**, his theory of the movement of stars, 2718, 4438  
**Karachi**, is a port of India, 1548  
**Karakorum Mountains**, 3932  
**Karlsefni, Thorinn**, American colony of, 257  
**Karnak**, pylon built by Seti I., picture, 5007  
temples, ruins, 4787  
**Kashgar**, where it is, 3934  
**Kate Barlass**, story, with picture, 240  
**Kattegat**, passage between Sweden and Denmark, 3600  
**Kaukeli Mountains**, in Norway, 3599  
tourists snowballing, picture, 3599  
**Kauri-tree**, gives a sort of gum, 1462  
**Kay, Sir**, one of Arthur's knights, 867, 1680  
**Kazan Cathedral**, in St. Petersburg, 3748  
**Koa**, a bird that eats sheep, 1747  
**Kearney, Philip**, at Santa Fé, 1832  
**Kearnage**, the war-vessel, 2015  
**Keats, John**, life, 3910; picture, 3907  
poems: see Poetry Index

# INDEX

**Keble, John**, picture, 1999  
poems: see Poetry Index  
wrote *Sun of My Soul*, 2000

**Keeler, Prof. J. E.**, has photographed a nebula, 2865

**Keowatin**, organised into a district, 4105

**Keller, Helen**, sketch of, 2060

**Kellogg, Elijah**, *The Gladiator's Appeal*, 5505

**Kells, Book of**, in Dublin, 5461

**Kelts**, conquered by the Romans, 3352  
in the British Isles, 469  
invaded Europe, 2851  
lived in Switzerland, 2962  
lived in the Netherlands, 3457

**Kelvin, William Thompson, Lord**, and conservation of energy, 4476  
his powers of invention, 4943  
on dissipation of energy, 4368  
on sensible and latent heat, 4474  
picture, 2113  
used wire to sound the sea, 5167  
was an electrician, 2121  
what he did for telegraphy, 4317  
what he said about seeds, 1778  
what he said a drop of water is, 1553  
what he supposed matter was, 3467

**Kempfenfelt, Richard**, drowned, 472, 4434

**Kempis, Thomas à**, his life, 3987  
picture, 3981

**Ken, William**, bishop, picture, 1999  
wrote hymns, 2000

**Kenia, Mt.**, is in Africa, 4254

**Kenilworth**, the story of the novel, 1494

**Kennel**, making one, and pictures, 5105

**Kenneth**, king of Scotland, 434, 3079

**Kent**, was an old kingdom, 428

**Kent cob**, nut, 1965; picture, 1969

**Kentish glory moth**, picture, face 2983

**Kentish hill**, where the ancient Britons fought the Romans, picture, 196

**Kentucky**, admitted, 1820, 3533  
as slave state, 2010  
remains in Union, 2012  
settlement, 1820

**Kentucky blind fish**, with picture, 2683

**Kepler, John**, a story about, 1182  
believed in astrology, 1940  
discovered movements of planets, 2426  
his law explained by picture, 3547  
his laws of planetary motion, 3547  
picture, 1655  
saw a comet, 2497  
the story of his life, 1658

**Kern Knotts Crack**, picture, 5017

**Kerosene**, how we get it, with pictures, 4131

**Kessinger, Jim**, subject of yellow fever experiment, 3201

**Kestrel hawk**, 1846; pictures, 1744, 1847

**Ketch**, ship, 3914; picture, 3913

**Kethe, Wm.**, hymn-writer, 1995

**Kettle**, a boiling kettle, picture, 4365  
the song of the, 5506  
the use of a marble in, 2878  
why it does not get red hot, 3546  
why it sings, 911

**Key, Francis Scott**, author of the *Star Spangled Banner*, 1399, 2955

## See also Poetry Index

**Keystone**, holds an arch together, 620

**Khaibar Pass**, its length, 3938  
north-west of India, 1544

**Khaki**, why our soldiers wear it, 3407

**Khartoum**, Gordon's defence and Kitchener's victory, 4260

**Khedive**, is the ruler of Egypt, 4258

**Kherson**, near mouth of Dnieper, 3631

**Kidd, Captain**, a pirate, 525

**Kidneys**, purify the blood, 1583, 1584

**Kiel**, headquarters of German navy, 2750

**Kiel Canal**, its position, 2750

**Kier, Samuel M.**, secured carbon oil, 4131

**Kiev**, an old town, 3750  
in Russia, 3624  
picture, 3744  
was desolated by fire, 3624  
was held by the Lithuanians, 3626

**Kilauea**, a terrible volcano, 2491  
largest active volcano, 2181

**Kilimanjaro, Mount**, in Africa, 4254

**Killarney**, description of, 5466

**Killarney**, fairy fountain of, legend, 3166  
lakes of, with pictures, 5465

**Kimberley**, diamonds found, 1770

**Kimono**, is worn in Japan, 372

**Kinchinunga, Mount**, in the Himalayas, with picture, 2502

**Kinematograph**, a moving picture, 3467

**Kinetic energy**, energy of motion, 3552

**Kinetic theory of gases**, what it is, 3467

**Kinetoscope**, how to make a toy kinetoscope, with pictures, 4141

**King, Grace**, sketch of work, 2050

**King, Mrs. Harriett** see Poetry Index

**King**, boy who became a, 5075  
cruelty in olden days, 5022  
how the bad news reached the king, story, 4273  
king's daughter in the mountain, story, with picture, 1902  
king's guard, puzzle, and picture, 4997, 5114  
king's watchers, story, and picture, 4935  
of the castle, a game, 5527  
of the golden river, story, and pictures in colour, 1433, 1526  
the king, the nobleman, and the peasant, story, 3647, 4008  
the king's guest, a story, 5651  
the two kings, a story, 5654  
who came to Cashmere, story, 2745  
who could not sleep, a story, 5347  
who loved the poor, story, 4717  
why a king has an orb and sceptre, 5650  
with the golden touch, story, 556

**Kingfisher**, is of many species, 1747  
pictures, 51, 1741, 1744

**King George's War**, in colonies, 881

**King Henry V.**, extract from the play, 5360

**King Lear**, allusion to Child Ronald, 5081  
story of the play, and picture, 633

**King's College**, Cambridge, founded by Henry VI., 756

**Kingsley, Charles**, picture, 2307  
poems: see Poetry Index  
the story of his life, 2315  
wrote *The Water Babies*, 1472, 3801  
wrote *Westward Ho*, 3661

**Kingsley, Henry**, was a novelist, 2316

**King's Mountain**, battle of, 990, 1822

**Kingsport, Can.**, pictures, 5603, 5605

**Kingston, Ont.**, Canadian town, 5425  
first capital of Canada, 4098

**Kingstown, Ireland**, port of Dublin, 5460

**King vulture**, bird, 1844; picture, 1841

**Kinney, Coates**: see Poetry Index

**Kioto**, was an old capital of Japan, 372

**Kipling, Rudyard**, on *Fuji-yama*, 370  
poems: see Poetry Index

**Kirghiz**, a wandering tribe, 3932

**Kirke, Sir David**, commander of English fleet, 3620

**Kitchener, Lord**, victories in Egypt, 4260

**Kite**, bird, 1844; picture, 1845  
sick kite, fable, with picture, 5205

**Kites**, Franklin experimented with a kite, 2116  
how to make kites, with pictures, 1506  
used in building a bridge, 20  
what makes them fly, 917  
why kite keeps up in the air, a picture, 5688

**Kittens**, picture, 555

**Kittiwake gull**, 1628; picture, 1629

**Knaprill family**, restored the Ottoman power, 3153

**Kiushin**, important in Japan's history, 370  
southern island of Japan, 366

**Kieber, General**, campaign in Egypt, 4258

**Klondyke**, gold in the, 2178  
where it is, 1244

**Knaresborough**, the brave boy of Knaresborough, tale, 1109

**Knee-cap**, how it is formed, 2546

**Knee-joint**, most wonderful joint, 2546

**Knevett, Sir Thomas**, captured Guy Fawkes, 1792

**Knife**, mystery of the suspended, 5658

**Knight**, and the ugly old woman, *Canterbury Tale*, 442  
and wonderful stone, story, 2745  
why knights wore devices, 1639

**Knights of St. John**, Order of, did much for Malta, 1875  
was founded, 1589



# INDEX

- Knight's tale**, in *Canterbury Tales*, 441  
**Knights Templars**, Order of, founded, 1589  
**Knight's vigil**, picture, 1323  
**Knight Templar**, a rock on Lundy Island, with picture, 1058  
**Knitting**, frames set up in Leicester, 1028  
 how to knit, with pictures, 4669  
**Knives**, how they are made, picture, 4736  
 how to clean knives, 4456  
 how they came into use, 4735  
 knife-edge magnified, picture, 2324  
**Knot**, how the sailor ties his knots, 235  
 to make a magic knot, with picture, 4778  
**Knot-stitching**, with picture, 2351  
**Knowledge**, how it dies out, 2802  
 how it influences our deeds, 5131  
**Knox, Henry**, portrait, 1391  
**Knox, John**, opposed Mary Queen of Scots, 3088  
**Knudstrop**, belonged to Denmark, 1657  
**Koala**, is a marsupial, 862  
**Kobe**, has become a large city, 372  
**Koch, Professor Robert**, and sleeping sickness, 3145  
 discovered the consumption microbe, 907  
 his work in medicine, 4204  
 in his laboratory, picture, 4203  
**Koenig's flames**, picture, 4913  
**Koenig, Frederick**, printer, 3574  
**Kopernik, Nicolas**: see Copernicus  
**Koran**, dictated by Mohammed, 5524  
 how it was made, 5098  
 is the Bible of the Mohammedans, 3002  
**Korea**, flag of, picture in colour, 1640  
 its history, 363  
**Koreans**, pictures, 374  
 settled in Japan, 364  
**Kosciuszko**, picture, 981  
**Kosovo**, battle of, won by the Turks, 3154  
 province of Turkey, 3224  
**Kossuth, Louis**, fought for Hungary, 124  
 was exiled, 2856  
**Kramer, Gerhard**, gave us Mercator's projection, 1751  
**Kremlin**, in Moscow, 3632, 3748  
**Kronstadt**, has a great arsenal, 3746  
 named by Peter the Great, 3630  
**Kruger, Paul**, how he treated the British, 1770  
**Krupp, Messrs.**, factory, 2752  
**Krypton**, is an element in argon, 1295  
**Kublai Khan**, seated in a canopy, picture, 55  
 the king under whom Marco Polo served, 64  
 was a great ruler, 112  
**Kubn-ed-Din**, a slave who ruled, 2912  
**Ku Klux Klan**, a secret society, 2024  
**Kurile Islands**, near Kamchatka, 363  
**Kurland**, was added to Russia, 3631  
**Kwen Lun Mountains**, 3931
- L**
- Lager**, what it is, 1769  
**Labat**, who saved his own son, 1734  
**Labour**, division of labour, 5282  
**Labrador**, discovery of, 268, 3617  
 revisited, 3617  
**Laburnum-tree**, with picture, 3654  
**Lace**, how to make a braid lace collar, with pictures, 5352  
 made in Belgium, 3464  
**Lace-wing fly**, pictures, face 3140 in colour, 3259  
**Lachish**, taken by the Assyrians, 4978  
**La Clementina**, houses, picture, 4575  
**Lacoste, Mrs.**: see Poetry Index  
**Lacquer**, how to lacquer, 2257  
**Lact albumin**, what it is, 4547  
**Lactals**, carry fat in our bodies, 2347  
**Lactic acid**, the acid of sour milk, 2100, 2795  
**Ladies-tresses**, description, 5036  
 picture, 5037  
**Ladoga, Lake**, largest lake in Europe, 3623  
**Ladybird**, 3258; pictures, 2322, 3255, 3257  
**Lady's eardrop**, name of fuchsia, 5277  
**Lady's smock**, description, 4614  
 flower, picture, 4608  
**Laennec, René**, invented stethoscope, 4197  
**La Farge, John**, joins American forces, 988  
 life and art, 4150  
 picture, 981  
 portrait statue of, 4948, 5333  
 visits the United States, 3534
- Lafayette, Marie Joseph Paul, Marquis de**, commanded the National Guard, 2270  
 helped to govern France, 4054, 4056  
**La Force**, a prison in Paris, 330  
**La Fornarina** and Raphael, picture, 4947  
**La Guaira**, port of Caracas, 4576  
**Lake Champlain**, battle of, 2902, 3620  
 discovered, 3620  
**Lake-dwellers**, who they were, 2962  
**Lake Erie**, battle of, 3901, 4279  
**Lake of the Four Cantons**, 2964  
**Lake Peninsula**, in Canada, 1240  
**La Mancha**, district in Spain, 3358  
**Lamas**, Tibetan priests, 3940  
**Lamb, Charles and Mary**, pictures, 4675, 4685  
 poems: see Poetry Index  
 their lives, 4683  
**Lammermoor**, vulture, 1843; picture, 1841  
**Lamp**, effect on chimney, 5250  
 electric, 657, 4449  
 gas, 653  
**Lamprina**, golden, picture in colour, face 3140  
**Lancashire**, cotton manufacture, 2328  
**Lancaster**, a Roman name, 196  
**Lancaster, House of**, 756  
 meaning of name, 5388  
**Lancelot**, kind of fish, 3677  
**Lancelot, Sir**, brought Guinevere to Arthur, 870  
 Elaine and Lancelot, 1185  
 fought with King Arthur, 3311  
 picture, 869  
**Land**, dry land becomes sea, 404  
 how continents sank below oceans, 3004  
 how it tapers off to the south, 3006  
 two-sevenths of the earth is land, 3004  
**Land crabs**, pictures, 2583  
**Lander, Richard**, went to Africa, 282  
**Landes**, marshes near Bordeaux, 2400  
**Land of a Thousand Lakes**, Finland, 3623  
**Land of the Morning Calm**, Korea, 363  
**Land of the Red Daisies**, the, story, with pictures, 708  
**Land of the Rising Sun**, Japan, 364  
**Lander, Walter Savage**: see Poetry Index  
**Landrail**, bird, 1958; egg, picture, 1744  
**Landseer, Sir Edwin**, his picture, A Distinguished Member of the Humane Society, 498  
 his picture, Wild Cattle at Chillingham, 385  
 made the lions of the Nelson Column, 1166, 5004  
**Land's End**, little pixies of, story, 1796  
**Lane**, walk in an English lane, with pictures, 3885  
**Laufrauc**, archbishop of Canterbury, 2702, 4709  
**Langside**, battle of, 3088  
**Languages**, how they arose, 4463  
 use of one language only, 4439  
 what makes a language beautiful, 4077  
 why there are so many, 1268  
 why we have different words for the same thing, 3239  
**Lanner**, a falcon, 1846  
**Lansdowne, Marquis of**, governor-general, 4106  
**Lantern fly**, picture in colour, face 3140  
**Laocon**, picture, 4166  
**Lao-tze**, his life and teaching, 2998  
 picture, 2995  
**La Pao**, Indian woman with child, picture, 4593  
 largest town of Bolivia, 4572  
**Laplace, Pierre**, invented the calorimeter, 4474  
 theory about nebulae, 2862  
**Lapo**, the teacher of Arnolfo, 2780  
**Lappet moth**, how it protects itself, 3415  
**Lapps**, at home, picture, 4727  
 use reindeer, 277, 3601  
 were driven north by the Teutons, 3592  
**Lapwing's egg**, picture, 1741  
**Larboard**, what it means, 4565  
**Larch**, picture, 3656  
 what kind of tree it is, 3656  
**Larchmont, the**, sinking of, 3106  
**Large**, battle of, 8082  
**Lark**, egg, picture, 1744  
 its life-story, 2061  
 picture, 2055  
 the lark and her young ones, fable, with picture, 2378  
**Larkspar**, different kinds, 5270  
 its family, 4110  
**Lars Porrena**, king of Etruria, 1403  
**Larynx**, contains the vocal chords, 2455  
 how it is made and works, 1635, 3956

# INDEX

- Larynx**, pictures, 1634, 1635, 3953  
**La Salle, Robert Cavalier**, explores the Mississippi, 264, 880; portrait, 261  
 stopped on site of Chicago, 5513  
**Lascars**, name given to Malays, 1880  
**Last Judgment**, pictures, 4951, 4953  
**Last of the Mohicans**, story of the book, 177  
**Last Sign of the Moor**, a rock, 3355  
**Latent**, meaning of the word, 4474  
**Lateran**, pope's residence in Rome, 4946  
**Lathe**, how to build, with pictures, 4886  
**Latham House**, defence of, 4718  
**Latimer, Hugh**, bishop, died for his faith, 5068  
 picture, 5070  
**Latin**, why plants have Latin names, 4235  
 why we learn Latin, 3239  
**Latin Kingdom**: see Byzantine Empire  
**Latins**, fought against the Romans, 2631  
 settled in Italy, 5259  
**Latinus**, king of Italy, 72  
**Latium**, name for Italy, 72  
**La Tribune**, how the crew was saved, 3884  
**Laud, William**, pictures, 1895, 1896  
 put to death, 1893  
**Laudnum Bunches**, how to dance it, with picture, 3279  
**Laughing Cavalier**, picture by Hals, 4591  
**Laughing gas**, what it is, 938, 1196, 1666  
**Laughing jackass**, kind of kingfisher, 1747  
 picture, 1743  
**Laughter**, is good for us, 4746  
 why it exhausts us, 5168  
 why people laugh, 424, 4745  
**Laurel**, blossoms, 4486  
 may be cut in August, 1350  
 mountain, 4488; with picture, 4486  
**Laurier, Sir Wilfrid**, as premier, 4106  
 life and work, 4470  
 with pictures, 4471  
**Lauterbrunnen**, valley of, 5673  
**Lava**, comes out of volcanoes, 311  
 is melted rock, 3229  
**Lavender**, when to pick, 1509  
**Lavender bottle**, how to make it, with picture, 1925  
**La Vengeance**, and the Constellation, 2900  
**Lavinia**, promised to Aeneas, 72  
**Lavoisier, Antoine**, invented the calorimeter, 4474  
 showed that diamonds were made of carbon, 1289  
**Law Courts**, London, picture, 1159  
**Law tennis**, how to play the game, 4347  
 pictures, 4346, 4347, 4348  
**Lawrence**, of Bristol, sent a steamboat to the Thames, 2472  
**Lawrence, James**, commander of the Chesapeake, 1399, 2902  
 commander of the Hornet, 2902  
**Lawrence, St.**, Escorial dedicated to, 5498  
**Lawrence, the**, a brig, 4279  
**Lawson**, crossed Blue Mountains, 355  
**Lawson, John**, Indian captive, 17  
**Lawyer**, and the oyster, story, 4938  
 and the pearls, fable, with picture, 2849  
**Lawyer's tale**, in *Canterbury Tales*, 439  
**Laxey**, waterwheel at, picture, 2108  
**Layard, Sir Henry**, discoveries in Assyria, 2319, 4973, 4977, 4978  
**Laying**, how to layer plants, 3826; picture, 1279  
**Lazear, Dr. Jesse W.**, died while experimenting with yellow fever, 3201  
**Lazzaroni**, district in Naples, picture, 3022  
**Lead**, an element, 839  
 how lead in the earth was formed, 1571  
 in Canada, 5599  
 in the United States, 2660  
 its specific gravity, 3816  
 result of changes in uranium, 4234  
 why it is cheaper than diamonds, 4746  
**Lead pencils**, how they are made, pictures, 3403  
 made of carbon, 839, 1289, 4746  
**Leaf**, drawing and painting leaves, with pictures, 1453  
 leaves die at the end of summer, 425  
 leaves of water and land plants, 4961  
 making leaf pictures on wood, with picture, 5101  
 the lungs of a leaf, picture, 228  
**Leaf**, trees harmed by plucking leaves, 3093  
 water cannot enter, 4338  
 what a green leaf can do, 286  
 what happens when a leaf falls, 425  
 why a leaf is flat and thin, 230  
 why it changes colour in autumn, 1133  
 why leaves have different shapes, 4600  
 why leaves shake, 4601  
**Leaf butterfly**, 3414  
**Leaf-cutting bee**, nest and grub, picture, 2823  
**Leaf insect**, its life story, 3410  
 pictures, face 3140 in colour, 3411  
**Leaf-mould**, how to prepare it, 4462  
**Leap-frog**, game, 724  
**Leaping-pole**, how to use it, 3614  
**Leap year**, why we have leap year, 80  
**Leary, Edwin**: see Poetry Index  
**Learning by heart**, why it is useful, 4795  
**Leather**, fine leather from the sheep, 380  
 how to make leather sucker, 936  
 made from the hides of cattle, 376  
 production in United States, 2664  
 tanned by bark of trees, 745  
**Leaven**, how it acts in dough, 1143  
**Lebanon**, mountains in Syria, 3874  
**Leclanché electric battery**, with picture, 1075  
**Leclern**, why made like an eagle, 5650  
**Lee, Charles**, captured, 986  
 not useful, 984  
**Lee, Richard Henry**, motion in Congress, 986  
**Lee, Robert E.**, as college president, 2024  
 in command Confederate Army, 2016  
 invades Union territory, 2016  
 picture, 2011  
 surrenders, 2022, 3536  
**Leeks**, should be sown in March, 2971  
**Leeuwenhoek, Anton van**, studied microscopes, 2319  
**Leeves, William**, composer, 3742  
**Leeward**, what it means, 4565  
**Leg**, bones, picture, 2543  
 how it is formed, 2546  
 why artificial legs are called cork legs, 5524  
**Legaré, James**: see Poetry Index  
**Legend of Montrose**, Scott's novel, 1495  
**Legends**, what a legend is, 3166  
 See also Stories  
**Leghorn**, the port of Florence, 3024  
**Leguminous plants**, 3340  
**Le Havre**, its trade, 2396, 2399  
 port of Northern France, 2394  
**Leibnitz, Gottfried**, life, and portrait, 851  
**Leicester, Robert Dudley, Earl of**, hero of Kenilworth, 1494  
 how he treated Amy Robsart, 3854  
**Leicester**, derivation of name, 5383  
**Leif the Lucky**, an explorer, 3594  
**Leighton, Lord**, a sculptor, 4162  
 his picture, in colour, Phenicians trading with the early Britons, face 191  
**Leipzig**, battle of, 2576, 4364  
 famous for books, 2752  
**Lemming**, a rodent, 769; picture, 771  
**Lemons**, how they grow, picture, 643  
 how to make electricity with a lemon, with picture, 88  
 where they grow, 642  
**Lemur**, animal, 608; pictures, 51, 607  
**Lena River**, its length, 3752  
**L'Enfant, Peter Charles**, laid out Washington City, 1714  
**Lens**, different kinds of lenses, 5639  
**Leodegran, King**, father of Guinevere, 870  
**Leofric**, Lord of Coventry, 5386  
**Leon**, a province of Spain, 3353  
**Leonard, St.**, legend of, 3648  
**Leonardo da Vinci**, a great painter, 757  
 his picture, Mona Lisa, 4589  
 his portrait of Jesus, 4701  
 his work as a painter, 4586  
 one of his sayings, 1964  
 portrait, 759  
 portrait by, 762  
 rivalry with Michael Angelo, 4950  
**Leoncavallo, Ruggero**, composer, 3252  
**Leonidas**, drove back the Persians, 1301  
 killed at Thermopylae, 5062  
**Leonids**, a shoal of meteorites, 1864  
**Leopard**, picture, 136  
 what kind of animal it is, 139

# INDEX

**Leopardi, Alessandro**, his work on the Colleoni statue, 1254, 4161  
**Leopold**, duke of Austria, 1590  
**Leopold**, king of Belgium, 3464  
**Lepanto**, battle of, 3158, 3358; picture, 3157  
**Lepidoptera**, butterflies and moths, 2984  
**Leprosy**, leper colony of Molokai, 2182  
**Les Misérables**, extract from book, 5362  
**Lesseps, Ferdinand de**, made the Suez Canal, 4258  
**Letchworth**, its garden city, 2875  
**Letold of Tournay**, crusader, 1588  
**Lettering**, printing and fancy lettering, with pictures, 4879  
**Letters**, how our letters come to us, with pictures, 3321  
     how to write a letter, 3708  
     why they have to be stamped, 4116  
**Letton, John**, started printing, 3572  
**Lettuces**, how to grow them, 573, 3922  
     must have moisture, 3398  
     time to sow them, 2971, 3278  
**Leuttra**, battle of, 1304  
**Leutze, Emanuel**, his "Washington crossing the Delaware," a picture, 4135, 4149  
**Levant, The**, 3016  
**Lever, Charles**, story of his life, 2903  
**Le Verrier, Urbain**, astronomer, 2429  
**Levers**, the different kinds, 3673  
**Lewes**, battle of, 600  
**Lewis, Meriwether**, explorations of, 1396  
**Lewis and Clark Expedition**, explores the Rocky Mountains, 1396, 3534  
**Lexington**, battle of, 983  
**Leyden**, plan of, picture, 3553  
     siege of, 3351, 3460  
     town in Holland, 3456  
     university founded, 3554  
**Leyden jar**, discovered, 2115  
**Lhasa**, entered by the British, 3938  
     picture, 3935  
**Liberator (The)**, a newspaper, 3535  
**Liberia**, independent state in Africa, 4262  
**Liberty Statue**, in New York Harbour, a picture, 2666  
     presented, 3537  
**Libraries**, their work for children, 3199  
**Library of Congress, The**, description, 1710  
**Lichtenberger, André**, author of The Sad Heart of Little Trott, 3209  
**Lick observatory**, its wonderful telescope, with picture, 1947  
     nebula photographed, 2865  
     nebula discovered, 2861  
**Liebig, Baron**, chloroform invented, 1871  
     his life, 854; with picture, 851  
     his opinion of meat extracts, 3113  
**Ligeo**, great engineering centre, 3464

## LIFE

### The Child's Book of Its Own Life

The following are actual headings of the chapters in this section; the separate entries appear below, and in their proper places in the index.

food and its uses, 2695  
 forest of nerves within us, 3561  
 fresh air and healthy lives, 1787  
 hearing and speaking, 3953  
 how and when to eat, 3045  
 how life began on the earth, 167  
 how life came out of the sea, 359  
 how the plant lives on air, 285  
 how to eat and be healthy, 2343  
 how to remember, 4793  
 how to think, 5025  
 how your body is built up, 2437  
 life and the lungs, 1633  
 living things around us, 61  
 Nature's wonderful food, 2791  
 our lives and the nation, 5281  
 our muscles and their masters, 2625  
 our unseen friends and foes, 903  
 plant's wonderful secret, 227  
 seeing colours, 4507  
 smell and taste, 4627  
 talking and singing, 4073  
 tea, coffee, and tobacco, 3315  
 the bread by which we live, 2923  
 the hair and the nails, 1961

**Life**, the head and the limbs, 2541  
 the heart, the living pump, 1579  
 the light in our eyes, 4401  
 the making of the body, 659  
 the marvel of hearing, 3867  
 the master of the body, 4731  
 the mouth and eating, 2206  
 the mouth and the teeth, 2097  
 the mystery of the brain, 3715  
 the parts of the brain, 3776  
 the parts of the eye, 4293  
 the real value of foods, 3109  
 the red cells of the blood, 1383  
 the simplest kind of life, 1003  
 the skin and its uses, 1909  
 the story of the eye, 4213  
 the tiniest living things, 781  
 the value of meat as food, 3213  
 the white cells of the blood, 1441  
 what happens when we think, 4939  
 what life is made of, 1181  
 where life really is, 1101  
 why life needs the land, 545  
 why we do things, 5131  
**Life**, cannot exist without liquid water, 359  
 depends on ferments, 4062  
 great heat is fatal to life, 4062  
 how long it has existed on earth, 4744  
 length of life, 3385  
 life began in the sea, picture, 169  
 life exists on other worlds, 3436  
 what and where it is, 61, 62  
**Life and Voyages of Christopher Columbus**, extract from the book, 5506  
**Lifeboat**, its heavy iron keel, 3838  
     pictures, 4425, 4429  
     race for the, story, 2951  
**Ligaments**, bind the joints, 2625  
**Light**, air effects light, 1128  
     bent by what it passes through, 2230, 5041  
     colour the pitch of light, 5174  
     colours in, 5041  
     different kinds of light, 5044  
     different ways it is given out, 3377  
     electric theory of light, 5176  
     enters our bodies, 2697  
     fiber in our body, 2441  
     forms that we cannot see, 5039  
     gets fainter as it travels, 2508  
     has a pushing power, 2497  
     has different powers, 1993  
     has no weight but pressure, 1775, 5040  
     how it affects colours, 4339  
     how it passes into the eye, 4401  
     how light affects our breathing, 1909  
     how light travels, 3688; picture, 2503  
     how man learned to strike a light, picture, 775  
     how some people see light, 156  
     how we should light our homes, 4510  
     is a kind of wave, 1060, 3762, 3977, 5042  
     is a state of motion in the ether, 3466  
     its laws like those of radiant heat, 4320  
     its movement, 5040, 5173  
     its refraction, 4584, 5177  
     light and colour, 5173  
     light of the fire inside the earth, 1060  
     light that shines over the sea, picture, face 737  
     luminous matter and its atoms, 5043  
     men who gave us light, 653  
     necessary for life, 230  
     Newton's idea of light, 5040  
     polarisation of light, 5173  
     rapidity of motion of, 5640  
     rate at which radiant light travels, 4180  
     rate of light's movement, 1578, 1774, 1941, 4582  
     reflection of light, 5177  
     things transparent to light, 4320  
     transformation into heat, 5176  
     travels very rapidly, 147, 777  
     wave-lengths of light, 5175  
     we cannot see light and darkness at the same time, 3092  
     what causes a light to be yellow, 1780  
     what happens when light goes out, 3432  
     what it is, 1267  
     what it is made of, 2797, 5039  
     what the blue light seen on the sea at night is, 3694  
     what the interference of light is, 1993

# INDEX

**Light**, why it is red when we shut our eyes, 426  
 why it passes through thin metals, 3861  
 why light gives light, 4822  
 why light keeps us awake, 1272  
**Lighthouse**, how built, with pictures, 737, 739  
 picture, 4427  
**Lightning**, can be seen for a great distance, 2503  
 how it kills people, 3688  
 its electricity passes into the earth, 3688  
 often destroys hemlocks, 5440  
 sky does not open, 2074  
 why it strikes certain things, 2875  
**Lightning-rod**, invention of, 2867  
**Lights**, why a light goes out in water but  
 bares up in paraffin, 4114  
 why spinning lights make rings, 511  
**Light things**, why they look larger than dark  
 things, 3382  
**Ligny**, battle of, 4364  
**Ligurian Republic**, formed, 3016  
**Liliuokalani**, Queen, of Hawaii, 2181  
**Lille**, manufacturing town in France, 2396  
**Lily**, different kinds, 5271  
 making patterns with, picture, 3375  
 pictures, 5278  
**Lily of the valley**, 5272  
**Lily Tower**, window, picture, 2790  
**Lima**, capital of Peru, 4574; picture, 4573  
 statue of Bolivar, 4506  
**Limbs**, how animals use their limbs, 664  
 how limbs were formed, 662  
**Lime**, exists in the sun, 2088  
 its Latin name, 1669  
 salt that strengthens the bones, 2698  
 use in purifying beet-juice, picture, 695  
 valuable manure, 2254  
 where its heat comes from, 4338  
**Limestone**, what it is like, with picture, 5197  
 where it is found, 2886, 4246  
**Limestone City**, The, Kingston, Ont., 5425  
**Lime tree**, pictures, 3183  
 section of twig, through the microscope, pic-  
 ture, 2321  
**Limoges**, noted for china, 2396  
**Limpets**, how they live, 2590  
 pictures, 1417, 2589  
**Lincoln, A.**, administration, 3537  
 as president, 2012  
 assassination of, 2022, 3536  
 elected president, 2010  
 Emancipation Proclamation, 2016  
 life, 793, 1596  
 pictures, 787, 3532, 4840, 4848  
**Lincoln, Mary Todd**, in White House, 391  
 portrait, 387  
**Lincoln**, England, meaning of name, 5388  
**Lincoln Park**, in Chicago, picture, 5515  
**Lind, Jenny**, life and art of, with pictures, 5495  
 picture of, 5495  
**Linden**, name for the lime-tree, 3183  
**Lindisfarne**, its beautiful abbey, 430  
**Lindsay, Lady Anne**, wrote Auld Robin Gray,  
 3742  
**Linen**, production of in United States, 2664  
**Lines**, how to draw straight lines, 1213  
**Ling**, Chinese for mountain, 106  
**Ling**, its eggs, 201  
**Linnaeus, Carolus**, floral clock made, 3960  
 life and portrait, 851  
 return from ramble, picture, 850  
 why he gave plants Latin names, 4235  
**Linnaeus**, bird, pictures, 2059, 2061  
 egg, picture, 1744  
 how long it lives, 2328  
 its song, 2062, 2068  
**Linotype machine**, how it works, with pictures,  
 891  
**Linsseed**, may be grown without soil, 2563  
**Liougent**, and the Constellation, 2900  
**Linton, Mrs. Lynn**, life, 2599; picture, 2593  
**Linton Falls**, flood, story, and picture, 4829  
**Lion**, a coward, 5624  
 American lion: see Puma  
 and four bulls, fable, with picture, 3508  
 and the cat, 5421  
 how long it lives, 2328  
 how to make a stuffed lion, with pictures, 715  
 in England long ago, 49, 192  
 in love, fable, with picture, 4804  
 in the royal arms of Scotland, 3082

**Lion**, stories about, 5349, 5350  
 unspoken language of, 5324  
 what kind of animal it is, 132  
 word in different languages, 5234

## Pictures of Lions

caged lion, 3129  
 head of lion, 1513  
 lion and lioness, with young, 130  
 lion and tiger, in colour, 133  
 lions, 51, 133  
 rampant lion of Scotland, 3079  
**Lionel**, duke of Clarence, in Ireland, 752  
**Lion of St. Mark**, monument, with picture, 5005,  
 5008  
**Lions**, lord of the, story, 2608  
**Lions**, Gulf of, why so-called, 2394  
**Lipped mitres**, how to make, 1346  
**Lippi, Filippino**, painter, 4950  
 portrait, 4945  
**Lippi, Fra Filippo**, painter, 4950  
 portrait, 4945  
**Lips**, supplied with many nerves, 2205  
**Liquid air**, colder than ice, 4050  
 experiments, pictures, 4047, 4049  
**Liquidambar**, description, 5624  
 picture, 5627  
**Liquids**, how to test reaction of, 1799  
 known in science as fluids, 3941  
 shrink and expand, picture, 4369  
 viscous and mobile, 5020  
 what mobile liquids are, 2505, 5020  
 why some liquids mix, 37  
 why they run up a tube, 4825  
**Lisbon**, city of Portugal, 3356, 3362  
**Lisele, Guillaume**, his map, 4041  
**Lisgar, Lord**, governor-general, 4106  
**Lisle, Moutet de**, author of the Marseillaise,  
 3737, 4688; picture, 2269  
 poem: see Poetry Index  
**Lissard, Castle**, in Ireland, 481  
**Lister, Joseph**, improved microscope, 2320  
**Lister, Lord**, and use of carbolic acid, 2507  
 picture, 4195  
 what he has done for surgery, 4203  
**List, Franz**, pianist-composer, 3252  
**Litchfield, Grace D.**: see Poetry Index  
**Lithium**, its specific gravity, 3818  
**Lithuanians**, peasant girls, picture, 3747  
 where they lived, 3626  
**Litmus**, its use, 1799  
**Little auk**, with picture, 1632, 1631  
**Little Bear constellation**, its legend, 3314  
**Little Belt**, what it is, 3598  
**Little Claus and Big Claus**, story, 323  
 written by Hans Andersen, 1468  
**Little Dorrit**, the story of the novel, 2435  
**Little Mermaid**, by Hans Andersen, 1468  
**Little Mother's League**, its work, 3194  
**Little Red Riding Hood**, story, 2140; with pic-  
 ture in colour, face 2140  
 when the story got its present form, 1467  
**Little Red Shoes**, story, with picture, 332  
**Little Russia**, where it is, 3747  
**Little Women and Good Wives**, story of the  
 book, 5143  
**Liver**, largest gland in body, 2343, 4114  
**Liverpool**, became a great city, 1096  
 meaning of name, 5383  
 mono-rail to Manchester, 91  
**Living silver**, name for quicksilver, 154  
**Livingston, Robert**, portrait, 987  
**Livingstone, David**, African exploration, 1100  
 body was carried to Zanzibar, 1373  
 burial in Westminster Abbey, 4252  
 discovered the Victoria Falls, 4747  
 his pet chimpanzee, 602  
 how he died, 278  
 last journey, picture, 278  
 meeting with Stanley, picture, 284  
 portrait, 3483  
 story of his life in Africa, 282, 3324  
**Living things**, all living things breathe, 167  
 how they have changed, 46  
 living things cast up by sea, picture, 1409  
 must have food to live, 168  
 things living around us, 611  
 tiniest living things, 781  
 two great kinds of living things, 63  
 two kinds of living things, picture, 64

# INDEX

- Livonia**, gained by Sweden, 3596  
**Livy**, lived in time of Augustus, 5266  
**Lizard Head**, the mermaid of, story, 1321  
**Lizards**, change of colour, 2458  
different kinds of lizards, 1219  
lizard that breaks in two, picture, 1226  
of long ago, 48; with pictures, 44, 49  
pictures, in colour, 1226, 1227  
the tuatera, 5570  
their ears, 155  
where lizards live, 1218  
**Llama**, found in Peru, 4574  
lives in South America, 275  
pictures, 275, 4497, 4503  
supposed to be Incas' property, 4504  
what it is like, 277  
**Llanos**, plains of the Orinoco, 4500  
**Llanwrin**, legend of the forest of yew, 3648  
**Llewellyn, Prince**, fought for Wales, 118  
**Loadline**, what it is, with picture, 4565  
**Loadstone**, attracts metals, 2113  
where it is found, 4246  
**Lobelia**, belongs to bellflower family, 4112  
**Lob Mor, Lake**, dried up, 3074  
reached by Sven Hedin, 3936  
**Lobsters**, life-story, 2586  
picture, 2585  
protection of young, 5479  
why they turn red when boiled, 2623  
**Lock corners**, used in woodwork, 1347  
**Locke, John**, on the mind, 4732, 4939, 5026  
picture, 4625  
showed how we make skin sensitive, 1963  
what he taught, 4621  
**Lock-heart**, Sir Simon, carried Bruce's heart, 3084  
**Locks**, description of, with pictures, 5371  
**Lockyer, Sir Norman**, invented astronomical instrument, 2086  
name given to element in sun's corona, 2083  
**Locomotion**, its meaning, 3468  
**Locust**, how men fight it, picture, 3078  
its life-story, 3140  
South African locust storm, picture, 3139  
**Locust-tree**, blossom, picture, 4486  
flowering, 4494  
honey, 5622  
pictures, 3555, 5629  
**Lodge, Sir Oliver**, and fog dispersion, 3090  
**Loess**, name of a soil, 106  
**Lofoden Islands**, off Norway, 3601  
**Loge**, from Australia, picture, 1359  
**Loire**, longest river in France, 2394  
**Lombardo family**, sculptors and painters, 1254  
**Lombards**, settled in Italy, 2522, 3014  
**Lombardy**, conquered by Napoleon, 3360  
crown of Lombardy, 3016  
province of Italy, 3012  
the little Lombard sentinel, story, and pictures, 4936, 4938  
**Lombardy poplar**, with picture, 3189  
**London**, burnt by Northmen, 430  
Fleet Street, remains found, 2887  
great builders of London, 1157  
how the name is derived, 5388  
Roman city, 198  
telephone exchange, 350  
why its policemen are called "bobbies" and "peelers," 5382  
why so called, 5384
- Pictures of London**
- birdseye view, 1750  
Central Telegraph Office, 3523  
map of part of City, 1750  
monument to fire of London, 5009  
Pool of London, 2076  
water that comes to London, 35  
**London Bridge**, first bridge, 19  
picture, 4838  
**London Company**, land granted to the, 513  
**London pride**, a wild flower, 5271  
its family, 4112  
**Lonely old woman of Morocco**, story, 5316  
**Longfellow, Henry Wadsworth**, life, 1479  
pictures, 1475, 1479  
poems: see Poetry Index  
**Long-glanded snake**, its poison gland, 1378  
**Long Island**, battle of, 988  
**Longitude**, what it is, 3036
- Longnor**, the white lady of, legend, 465  
**Long Parliament**, sat for twelve years, 1023  
**Longships Lighthouse**, picture, 4427  
**Longstone Lighthouse**, 1733; picture, 1735  
**Longstreet, General**, at Chickamauga, 2018  
**Long-tailed bird of paradise**, 1738  
**Long-tailed ichneumon**, picture, 3257  
**Loofah**, what it is, 3434  
**Lookout Mountain**, battle of, 2018  
**Lord of the Lions**, story, 2608  
**Lord of the White Elephant**, 1880  
**Lord of the Yellow Land**, 106  
**Lords**, of the grey and white castles, story, with pictures, 1897  
**Lorenzo**, the Magnificent, art patron, 1784  
made Florence a centre of learning, 3156  
pictures, 607, 4163, 5025  
**Loris**, kind of lemur, 608  
**Lorne, Marquis of**, as governor, 4106  
**Lorraine, Claude**, portrait, 4945  
story of his life, 4954  
**Lorraine**, given up to Germany, 2277  
taken by the French, 2528  
**Lotus**, Egyptians use for decoration, 3374  
making patterns with lotus, picture, 3375  
**Louisa, Mount**, his picture of Elaine, 1184  
**Louis VII.**, of France, 1589  
**Louis VIII.**, of France, 598  
**Louis IX.**, of France, pictures, 1591, 2063  
took part in the Crusades, 1592, 2066  
**Louis XI.**, of France, a good king, 2069  
at war with Charles the Bold, 3460  
visiting his peasants, picture, 2069  
**Louis XII.**, of France, how he treated the cruel nobleman, story, 3647  
**Louis XIV.**, of France, bought Dunkirk, 1023  
kept the Germans from the Rhine, 2523  
reigned over seventy years, 2070  
said, "The Pyrenees are no more," 2392  
wanted to reinstate James II., 2708  
went to war with England, 1029, 2540  
**Louis XV.**, of France, his death, 2267  
persecuted the Protestants, 2394  
**Louis XVI.**, of France, among his people, picture, 2069  
as a locksmith, 2268  
began to reign when young, 2267  
condemned to death, 2272  
execution, 1141, 4060  
flight from Paris, picture, 4067  
in the Temple prison, picture, 4058  
portrait, 4053  
revolution against him, 4053, 4054  
tried to carry out reforms, 2063  
tried to escape from France, 2270  
**Louis XVIII.**, of France, 4364  
**Louisa**, queen of Prussia, and the cornflower, story, 1677  
insulted by Napoleon, 2575  
**Louisburg**, battle of, 881, 884  
captured, 3622  
flourishing, 5604  
**Louise, Lake**, picture, 5608  
**Louisiana**, admitted, 1824, 3534  
discovery, 264  
purchase of, 1396, 3534, 3538  
secedes, 2010, 3536  
settled, 1824  
**Lounsbury, Charles**, his will, 5203  
**Louvre (Le)**, description of, with pictures, 5333  
**Love**, laughs at locksmiths, story, 1525  
may vary, 1648  
that is stronger than death, story, 4071  
**Love-bird**, parrot, 1747; picture, 1743  
**Love-in-a-mist**, flower, 233  
**Lover, Samuel**, poem: see Poetry Index  
story of his life, 3049  
wrote Rory O'More, 3743  
**Low Countries**: see Netherlands  
**Lowell, James Russell**, his life, 1484  
poems: see Poetry Index  
portrait, 1475  
**Lowell, Professor**, his discoveries, 3072  
**Lower Canada**, as a province, 3900  
**Loyola, St. Ignatius de**, his life, 3990  
picture, 3981  
**Lubbock, Sir John**: see Avebury  
**Lubeck**, joined Hanseatic League, 2526  
**Lucca oil**, use in making scent, 1501  
**Lucerne**, description of, 5676

# INDEX

**Lucerne**, monument to the Swiss Guards, 1804, 2272; picture, 2963  
**Lucerne, Lake**, in Switzerland, 2960, 2964  
**Lu-chu Islands**, south of Japan, 363  
**Lucius**, British king, 4635  
**Luck**, a box of good luck, story, 2304  
 what it is, 1271  
**Lucknow**, siege, 1099, 1706  
**Lucrotia**, wife of a Roman noble, 413  
**Ludwig I.**, of Bavaria, 2755  
**Ludwig II.**, of Bavaria, 3252  
**Lugworm**, 2587; picture, 2589  
**Luke, Mrs.**: see Poetry Index  
**Lukin, Lionel**, invented the lifeboat, 4429  
**Lullaby**, what it is, 470  
**Luminous things**, how they differ from non-luminous, 5178  
 what they are, 3977, 5043  
**Lump fish**, how many eggs it lays, 201  
**Lump-sucker**, picture, 208  
**Lundy's Lane**, battle of, 1399, 3901  
**Lung-fish**, breathes by lungs, 2446  
 can be brought alive from America, 2675  
 picture, 2447  
**Lungs**, how the air gets into our lungs, 1787  
 how the lung is made, 1636  
 life and the lungs, 1633  
 pictures, 1633, 1636, 1637  
 position inside chest, 1581, 1634  
 purify the blood, 1583  
**Lungwort**, its family, 4112  
**Lupercus**, Roman god, 4516  
**Lusitania**, Roman province in Spain, 3353  
**Luther, Martin**, and St. Peter's Church, 4948  
 defied the pope, 2527, 2708  
 great hymn-maker, 1996  
 pictures, 1999  
**Lützen**, battle of, 2528  
**Luxor**, ruins of temples, 4787  
 statue of Rameses II., picture, 5007  
**Luson**, scenes on, picture, 2185  
**Lycurgus**, settled laws of Sparta, 5124  
**Lydia**, a brave little Quakeress, 1327  
**Lydia**, conquest by Cyrus, 5058  
**Lyell, Sir Charles**, great geologist, 3223  
 his life, 853; portrait, 851  
**Lynn, Ethel**: see Poetry Index  
**Lyxx**, 49, 140; picture, 136  
**Lyons**, city, 2394; picture, 2397  
**Lyre**, musical instrument, 1015  
**Lyre-bird**, 1746, 2061; picture, 1743  
**Lyrio**, of many kinds, 343  
 what it is, 93  
 what it is used for, 94  
**Lysicrates**, monument at Athens, 5004  
 picture, 5008  
**Lysippus**, great sculptor, 4160  
**Lyte, Henry Francis**, poems: see Poetry Index  
 portrait, 1999  
 wrote hymns, 2000  
**Lytton**, port of New Zealand, 1464  
**Lytton, Edward Bulwer, Lord**, life, 2310  
 portrait, 2307

## M

**McAdam, John London**, made roads, 158  
**M'Alpin, Kenneth**: see Kenneth M'Alpin  
**Macao**, settlement in China, 109  
 woman and child, picture, 109  
**Macaroni**, drying process, picture, 3022  
 preparation of wheat, 2925, 3022  
**Macanlay, Lord**, his life, 4686; with portrait, 4675  
 poems: see Poetry Index  
 wrote Lays of Ancient Rome, 1403  
**Macaw**, parrot, 1747; pictures, 51, 1741  
**Macbeth**, usurped throne of Scotland, 3079  
**McClellan, George E.**, and the Army of the Potomac, 2014  
 forced to retreat, 2016  
 picture, 2017  
 placed in command, 2013  
**McClellan, Isaac**: see Poetry Index  
**McClure, Sir Robert**, explorer, 4724  
 portrait, 4725  
**McCormick, Cyrus Hall**, as inventor, 2668  
**Macdonald, George**, castle on the cliff, a story, 5597  
 poems: see Poetry Index  
 wrote fairy tales, 1474

**Macdonald, Sir John A.**, as premier, 4104  
 chairman of Canadian delegation, 4102  
 death, 4106  
 life and work of, 4469  
 picture, 4471  
 resigned and returned to power, 4105  
**Macdonough, Thomas**, commander American fleet, 2902  
 picture, 2899  
**Macdougall, William**, as lieutenant-governor, 4104  
**McDowell, Gen. Irvin**, at Bull Run, 2013  
**Macdowell, Patrick**, work on Albert Memorial, 5004  
**Macedon**, a province of Turkey, 3224  
 became a Roman province, 5130  
 conquest of Greece, 5130  
 formed a compact against Basil II., 3154  
 powerful Greek kingdom, 1304  
 shepherd, picture, 3225  
 war with Rome, 5264  
**Macedonian, the**, and the frigate United States, 1398, 2902  
**Machairodus**, tiger, picture, 44  
**Machinery**, agricultural, 2668  
 can a machine be made to count? 5640  
 efficiency of: see Efficiency of machinery  
 how it produces heat, 4366  
 inventions, 2667  
 machine worked by the sun, picture, 4365  
 to be run by alcohol, 1872  
 why we cannot get a perfect machine, 4368  
**Macintosh, Charles**, made first waterproofs, 5678  
**MacKay, Alexander**, life, 3489; picture, 3483  
**MacKay, Charles**, poems: see Poetry Index  
 song, 3740  
**MacKenzie, Alexander**, as premier of Canada, 4105  
**MacKenzie, David**, discovery of, 5147  
**MacKenzie, William Lyon**, a political leader, 3901  
**MacKenzie**, a part of New Zealand, picture, 1461  
**MacKenzie**, district of, 4105  
**MacKenzie River**, discovered, 5147  
**Mackerel**, fish, 202; picture, 203  
**McKinley, William**, administration, 3538  
 ancestral home, 5463  
 assassination, 2418, 3538  
 picture, 3532  
**Macintosh**, whence the name, 5678  
 why it keeps us dry, 683  
**MacMillan, Donald B.**, companion of Peary, 5212  
 discovered Greeley's old camp, 5214  
**MacMonnies, Frederick**, sculpture of, 3810, 3812, 4850  
**MacMally, Leonard**, wrote a song, 3741  
**Madagascar**, belongs to France, 2400, 4262  
**Madgeburg**, sugar is made there, 2750  
**Madison, Dolly**, her portrait, 387  
 in White House, 389  
**Madison, James**, administration, 3534  
 as president, 1389, 1398, 1825  
 picture, 1396, 3532  
**Madison Square**, with picture, 4310, 4311  
**Madison Square Garden**, history, 4310  
**Madonna**, and Child, pictures, 4589  
**Madonna lily**, 1509, 5271  
 pictures, 1509, 5278  
**Madras**, captured by the French, 1704  
 English factory set up, 1702  
 its harbour, 1548  
**Madrid**, capital of Spain, 3356, 3358  
**Mæcenæ**, patron of poets, 5218  
**Maelar, Lake**, in Sweden, 3600  
**Maelstrom**, famous whirlpool, 4743  
**Maestlinck, Maurice**, story of the Blue Bird, 5083  
**Magazine**, how to start a school magazine, and pictures, 4767  
**Magdalena River**, 4574  
**Magellan, Ferdinand**, his discoveries, 60, 4502; portrait, 60  
**Magellan Straits**, and their position, 4500; picture, 4499  
 why so called, 60  
**Magenta**, battle of, picture, 3021  
**Magroes Island**, 3601  
**Maggiore, Lake**, its position, 2960, 3012



- Maggots**, of moths, 5524  
**Magic answers**, a game, 2137  
**Magic boy fiddler**, of Sicily, story, 557  
**Magic carpet**, the, story, and picture, 1683  
**Magician**, the magician's jacket, and picture, 1615  
the story of the magician's forbidden room, and pictures, 1671  
**Magic-lantern**, for picture postcards, 99  
how the light is got, 1195  
how to make a magic-lantern, and pictures, 2767  
**Magic pen of truth**, story, 2092  
**Magic scissors**, the boy conjurer's, 836  
**Magic slippers**, a pair of, story, 2606  
**Magic square**, problem, 2350, 2489  
**Magic string**, trick, and picture, 101  
**Magic tinder-box**, story, and picture, 4126  
**Magic tumbler**, trick, 2132  
**Magna Carta**, 598, 4715  
not signed by King John, 5524  
**Magnesia**, battle of, 5264  
**Magnesia**, for cleaning teeth, 2100  
**Magnesium**, exists in the sun, 2088  
**Magnet**, experiments with, 2119  
how the Poles attract and repel each other, 5255  
moving steel, a picture, 5556  

**See also Electro-magnet**

**Magneto needle**, how it turns to Poles, 5253  
registers change of sun's surface, 2084  
**Magnetism**, electricity and magnetism, 5253  
Faraday's discoveries, 2120  
in the earth and sun, 5254  
**Magnifying glass**, how it makes the sun burn  
paper, 2880  
why it makes things look bigger, and picture, 42  
**Maggie**, egg, picture, 1744  
pictures, 1847, 2213  
robs other birds' nests, 1848  
**Maggie moth**, picture in colour, face 2382  
**Magyars**, ancestors of Hungarians, 2576  
founded Hungary, 2854  
invaded Italy, 3014  
invading Austria, picture, 2850  
**Maharajah**, prince in India, 1552; picture, 1701  
**Mahdi**, rebellion in Egypt, 4260  
**Mahmud**, of Ghurni, Mussulman, 1700  
**Mahogany**, what it is like, 4998  
**Mahratta**, war with the British, 1706  
**Maia**, goddess, legend of, 4518; with picture, 4517  
May sacred to, 4533  
**Maidenhair fern**, 3296  
**Mall-coach**, how it began, 4380  
**Maine**, and the white pine, 5438  
state of, admitted, 1826, 3534  
**Maine**, the, sinking of, 2188, 3538  
**Maise**, its value as food, 2926; picture, 2923  
stem under microscope, picture, 2321  
**Majuba Hill**, Boer victory at, 1770  
**Malacca**, obtained from the Dutch, 1879  
**Malapterurus**, the thunderer fish, 2451  
**Malaria**, germ, picture, 3143  
how it is caused, 1386, 3145  
how it is prevented, 3146  
symptoms, 4549  
what causes, 5641  
**Malayans**, invaded Japan, 364  
**Malays**, a kind of fowl, 1513  
**Malay States**, flag, picture in colour, face 1640  
**Malcolm Canmore**, king of Scotland, 3079  
**Malic acid**, found in apples, 1799, 4749  
**Malines**, woollen manufacture, 3458  
**Mallet**, Claude, rebellion, 330  
**Mallet**, David, song, 568  
wrote a play with James Thompson, 3738  
**Mallet**, Edward, British ambassador, 319  
**Mallow**, common, picture, 4284  
**Malope**, plant, picture, 5280  
**Malplaquet**, battle of, 2530  
**Malta**, history of Malta, 1875  
surrendered to the British, picture, 1879  
**Mamelukes**, how they rose to power, 4256  
ruled Egypt, 2912  
**Mammals**, have a backbone, 661  
the highest group of animals, 663  
**Mammoth**, lived in this country, 192  
pictures, 44, 5567  
**Mammoth**, remains on the Arctic shores, 3752  
what it is, 47  
**Mammoth Cave**, description, 583  
its stalactites, with picture, 4816  
**Man**, Isle of, giants and the Isle of Man, legend, 3166  
water-wheel at Laxey, picture, 2108  
**Manakin**, bird, 1748; picture, 1736  
**Manaos**, a port of Brazil, 4567  
**Manates**, animal, and picture, 1087, 1090  
**Manchuria**, a province of China, 3752, 106  
**Manchus**, became the rulers of China, 112  
Manchu lady and gentleman, picture, 109  
**Mandrill**, baboon, and picture, 607, 603  
**Manetho**, his history of Egypt, 4792  
**Manganese**, in Canada, 5600  
**Manila Bay**, battle of, 2184, 2188  
**Manila hemp**, is made into rope, 3991  
pictures, 3991, 3992  
**Manitoba**, admitted to confederation, 4104  
description, 5366  
minerals, 5599  
nitrates in its soil, 3341  
province of Canada, 1242, 1244  
transferred to Canada, 4104  
was added to Canada, 1248  
**Manlius**, Capitoline, defended Capitol, 554  
**Manlius Torquatus**, Titus, consul, 2630  
**Manny**, Sir Walter, burned Hennebont, 2478  
**Man-of-war**, animal, picture, 2327  
**Mantel-border**, in appliqué work, how to make, and picture, 4996  
**Mantis**, a strange insect, 3263  
**Manu**, a law-giver of the Hindoos, 1700  
**Manure**, how to manure soil, 2254, 4462  
keeps the ground moist, 3514  
why it makes plants grow, 3973  
**Manusio**, Aldo, a famous printer, 3574  
**Manx cat**, 1573; picture, 505  
**Many-banded mullet**, picture in colour, face 200  
**Maori**, Maori chief, picture, 1463  
natives of New Zealand, 1459  
**Map**, America, 8  
birdseye view of Ireland, 5462  
how the maps are made, 1749  
making maps in sand, and pictures, 3821  
Switzerland, part of, 5670  
**Maple leaf**, the emblem of Canada, 1246, 5429  
**Maple-tree**, pictures, 696, 3187  
striped, with pictures, 4489, 4490, 5621  
sugar, 5622; picture, 5625  
yields sugar, 693  
**Marabou stork**, 1956; picture, 1953  
**Marat**, Jean Paul, killed by Charlotte Corday, 2274, 4062; portrait, 4053  
**Marathon**, battle of, 1803, 5062, 5129  
**Marathon race**, how the runners fed, 3111  
**Marble**, Carrara marble, 3022  
its specific gravity, 3816  
what it is made of, 1669, 1798  
**Marbled white butterfly**, 2992  
**Marble Faun**, extract from the book, 5432  
**Marbles**, game, 5106  
**March**, how it got its name, 4516, 4533  
**March to the Sea**, Sherman's, 2020  
**Marconi**, Guglielmo, invented wireless telegraphy, 2476; portrait, 2467  
**Marcus Aurelius**, emperor of Rome, 533  
on disliking people, 5283; picture, 534  
**Marduk**, god of Assyria, 4981  
**Marengo**, battle of, 2274  
**Margaret**, daughter of Henry VII., 841, 3086  
**Margaret**, Maid of Norway, 748, 3086  
**Margaret**, of Anjou, wife of Henry VI. of England, fled to France, 756  
in the Wars of the Roses, 2533  
saved by a robber, picture, 755  
**Margaret**, St., 3079; picture, 3080  
**Margaret River Cave**, Western Australia, stalactites in, and picture, 1296  
**Margarine**, why it is a good food, 2793  
**Marguerites**, how to make of paper, 4140  
picture, 579  
**Marhaus**, Sir, killed by Tristram, 3211  
**Marian Harland**: see Mrs. M. V. H. Terhune  
**Maria Theresa**, of Austria, appeal to the Hungarians, picture, 2853  
fled to Hungary, 2530  
story of her last sacrifice, 1141  
took part of Poland, 2578

# INDEX

- Marie Antoinette**, queen of France, her early years as queen, 2267  
how she died, 2272, 4060  
pictures, 1141, 4053, 4057, 4058
- Marie Louise**, wife of Napoleon, 2858
- Marietta**, settlement and naming of, 1822
- Marigold**, marsh, 5035  
picture, 5033
- Marine or Naval Commission**, appointed, 2897
- Marion, Francis**, and the sweet-potatoes, 990  
portrait, 985
- Marionette**, the living marionette, an entertainment, with pictures, 2249
- Maritime Provinces**, of Canada, with pictures, 5601
- Maritza River**, in Turkey, 3149, 3224
- Marius, Gaius**, Roman general, 417, 5265
- Marjorie**, in the Tale of a Shop-window, 5691
- Mark**, king of Cornwall, 3212
- Markham, Edwin**: see Poetry Index
- Marlborough, John Churchill, Duke of**, favourite motto, 1029  
his victories, 565, 2530, 2540
- Marlborough, Sarah, Duchess of**, a favourite of Queen Anne, 2540  
how she sat in rags at Westminster, with picture, 4640
- Marlborough, New Zealand province**, 1464
- Marlinespike**, used by sailors, 235  
what it is, 4566; with picture, 4565
- Marlowe, Christopher**, a poet, 3330  
poems: see Poetry Index
- Marmont, A.**, Napoleon's marshal, 4362
- Marmora, Sea of**, 3149
- Marmoset**, monkey, 608; picture, 607
- Marmot**, animal, 670  
dwelling, 5416  
picture, 667
- Marne River**, joins the Seine, 2394
- Marpessa**, choice of Marpessa, story, 1432
- Marquessa spider**, stalking a fly, picture, 3301
- Marquette, Father**, a Jesuit missionary, 880  
explorations and death, 264  
visited site of Chicago, 5513
- Marram**, grass, and picture, 1334
- Marryat, Frederick**, his books:  
Jacob Faithful, with picture, 2197  
Masterman Ready, with picture, 2025  
Midshipman Easy, with picture, 2200  
Peter Simple, 2028
- Marrying a rope**, with picture, 3284
- Mars**, a Roman god of war, 1940, 4533  
how the Romans worshipped him, 4516  
picture, 4516
- Mars**, a planet, 146  
dryness of, 3004, 3072  
has no mountains, 3229  
has two moons, 2282  
has water on it, 3382  
how far it is from the sun, 150  
how it got its name, 2234  
its atmosphere, 4321, 5024  
its canals, 4120  
its continents pointed to the south, 3071  
its inhabitants, 3436  
likeness to the earth, 1949  
pictures, 2425  
what is known about it, 2426
- Marsden, Samuel**, missionary, 1460
- Marsellaise, The**, patriots march to Paris, 2270, 2272  
story of the song, 3737  
written by Rouget de Lisle, 1121, 2269
- Marselles**, its trade, 2398; picture, 2397  
where it is, 2394
- Marsh bent grass**, picture, 2980
- Marsh carex**, with picture, 4968
- Marsh-elder**, description of, 5190  
picture, 5189
- Marsh-gas**, causes the will-o'-the-wisp, 3542  
has no smell, 4628  
what it is, 1289, 1870
- Marsh mallows**, picture, 5189
- Marsh mallows**, how to make, 3513
- Marsh marigolds**, pictures, 3735
- Marsh woundwort**, 4970; picture, 4967
- Marston Moor**, battle of, 1109, 1888, 1895
- Marsupials**, description, 5479  
what they are, 860
- Marten**, description, 4820
- Martin V.**, pope, 4950
- Martin, Don**, in Mexican Legend, 5231
- Martin, Homer**, life and art, 4151  
picture by, 4156
- Martin, Jenny**, tale of, 5422
- Martin, bird**, its history, 2210, 2212; pictures, 2211
- Martin Chuzzlewit**, story of book, 2637
- Martinez**, battle of, 1304
- Martinique**, earthquake in, 1878
- Martino, Giovanni di**, sculptor, 1254
- Martyn, Henry**, life, 3485; portrait, 3483
- Martynia seed-pod**, picture, 3833
- Martyrs of the English Reformation**, 5067
- Marvel du jour**, moth, picture, 3413
- Marvell, Andrew**, how he refused a bribe, story, with picture, 4557  
poems: see Poetry Index  
worked with Milton, 3336
- Marvin, Ross G.**, death, 5213  
Peary's secretary, 5212
- Mary**, daughter of Charles I. of England, 1024
- Mary**, duchess of Burgundy, 3460
- Mary**, of Guise, 3088
- Mary**, of Modena, wife of James II., 1029
- Mary**, queen of Scots, her life, 846, 3088  
married Francis II., 2068  
pictures, 847, 3087
- Mary I.**, of England, daughter of Henry VIII., 2534  
her reign, 845  
married Philip of Spain, 3356
- Mary II.**, of England, became queen, 2535  
married William of Orange, 3463
- "Mary Elizabeth"**, candy merchant, 3066
- Maryland**, colony of, 520  
remains in Union, 2012  
slave state, 2010
- Maryland, My Maryland**, history of song, 2967
- Martipan**, how to make, 3512
- Masaccio**, his painting, The Tribute Money, 4588  
his work as a painter, 4586
- Maccagni, Pietro**, composer, 3252
- Maecene family**, famous sculptors, 1254
- Masham, Mrs.**, a favourite of Queen Anne, 2540
- Maskelyne, Nevil**, his invention, 1662
- Mason, James M.**, a Confederate commissioner, 2014
- Mason, John**, founded the New Hampshire Colony, 525
- Mason, Sir Josiah**, made metal pens, 3400
- Mason spider**, the trapdoor spider, 3302
- Mass**, a Roman Catholic service, 3243
- Mass**, difference between mass and weight, 543  
in weights and measures, 3671
- Massachusetts Bay Colony**, founded, 518  
religion of, 524
- Massena, André**, Napoleon's marshal, 4362
- Massif Central**, high lands in France, 2392
- Massinger, Philip**, a poet, 3330
- Mast**, different kinds, 3913  
picture, 4565  
some of the parts of a mast, 4566
- Masterman Ready**, story of the book, with picture, 2025
- Mastodon**, elephant, 50; pictures, 44, 3679
- Mat**, how to make a wool mat, with picture, 2486
- Matabele**, a people of Africa, 1766
- Matapan, Cape**, its rocks, 737
- Match**, how it is made, with pictures, 2358  
its history, with pictures, 774  
pulling one match through another, trick, with picture, 718  
tricks to do with matches, with pictures, 103, 1818, 3611  
why a match lights, 309  
why it flares up when held upside down, 4823  
why it goes out when we blow it, 160  
why it strikes, 773
- Matchbox**, chest of drawers, with picture, 103  
trick with, 336
- Maté**, Paraguayan tea, 4568
- Materialism**, of present-day people, 4439  
what it means, 4439, 4731
- Mat grass**, picture, 2982
- Mathematical optics**, 5178
- Mattathias**, his rebellion, 117
- Matter**, a kind of electricity, 5255  
does not disappear at absolute zero, 4049  
how it may exist, 837  
how its atoms set up waves, 5043  
how movement changes matter, 3465

# INDEX

**Matter**, made up of elements, 637  
 matter not found on the earth, 5022  
 movements of atoms, 4342  
 of the body, 1443  
 the different kinds of matter, 838, 3941  
**Matterhorn**, mountain, 2960; picture, 2958  
**Matthew**, St., in Ethiopia, 2330  
**Mattress**, when sleeping out, 4032  
**Maud**, daughter of Henry I. of England,  
 granted land to abbey at Reading, 592  
 helped by David I. of Scotland, 3090  
 story of her life, 2532  
 wars with Stephen, 594, 2702  
**Maud**, wife of Henry I. of England, 592  
**Mauretania**, ship, with picture, 2473  
**Maurice**, prince of Orange, 3462  
**Mauritius Islands**, taken from French, 1876  
**Mausoleum**, tomb of King Mausolus, picture,  
 5566  
**Mauve**, colour, discovered, 2507  
**Maximilian**, emperor of Mexico, 4390  
**Maximilian I.**, emperor of Holy Roman Empire,  
 married Duchess of Burgundy, 3460  
 tomb in Innsbruck Cathedral, 2854  
 was a Hapsburg, 2527  
**Maximilian**, cruelty to St. Catherine, 1010  
**Maxwell**, James Clerk, on electric waves of  
 light, 5042  
 pressure of light teaching, 1775, 5040  
**May**, flower, a name for hawthorn, 3449  
**May**, month, how it got its name, 4518, 4533  
**Mayas**, an ancient American tribe, 4384  
**Mayence**, a German city, 2754  
**Mayflower**, Pilgrim Fathers' voyage, 1022  
**Mayflowers**: see Trailing arbutus  
**May fly**, 3262; picture, 3259  
**Maynard**, John, how he steered a ship on fire  
 to safety, with picture, 3659  
**May-pinks**: see Trailing arbutus  
**Masagan**, Moroccan seaport, picture, 4255  
**Mase**, a puzzle, 5358  
**Maximi**, Joseph, his work for Italy, 214  
 portrait, 4841  
**Meade**, Gen'l George G., at Gettysburg, 2016  
 picture, 2017  
**Meadow barley**, with picture, 1339  
**Meadow foxtail grass**, picture, 2977  
**Meadow grasses**, pictures, 1341, 2979  
**Meadow pipit**, egg, picture in colour, 1744  
**Meadow-rue**, Alpine, picture, 4832  
 description, 5036  
 picture, 5033  
**Meadow soft grass**, picture, 1343  
**Meadowsweet**, use as medicine, 4964  
 what it is like, 4968; with picture, 4964  
**Measure for Measure**, story of play, 549  
**Measurement**, by beaver-skins, 5150  
 by metric system, 5641  
 how things are measured, 3669  
 how to measure the pressure of the atmos-  
 phere, 3944  
 of heights in South America, 5666  
 of things from a distance, with picture, 3134,  
 3135  
 size and weight of things, 3813  
**Meat**, American, 2658  
 value as food, 3213  
**Meat extract**, value as food, 2699  
**Mecca**, pilgrimages, 3876; picture, 3001  
**Medea**, daughter of Æetes, 186  
 who helped Jason, 186  
**Medes**, attacked Athens, 1803  
 defeated Assyrians, 4983  
 growth of kingdom, 5067  
 settled in Asia, 5067  
 their religion, 5058  
 union with Persia, 5068  
 wars with Mesopotamia, 4974  
**Medici**, Catherine de, mother of three kings,  
 2068  
 planned St. Bartholomew's Day, 2070  
**Medici**, Lorenzo dei: see Lorenzo the Magnifi-  
 cent  
**Medici**, Marie de, wife of Henry IV. of France,  
 2070  
**Medici family**, pensioned Botticelli, 4950  
 their great power, 3018  
**Medicine**, the world's great doctors, 4195  
 why it seems nasty, 3089  
**Medicine Hat**, description of town of, 5370  
**Medina**, pilgrimages made to, 3876

**Mediterranean Sea**, has a strong British fleet,  
 1875  
 people round, 194  
**Medium**, what it is, 4581  
**Medusa**, picture, 2334  
**Megalosaurus**, a lizard that ate flesh, 48  
**Meissonier**, Jean Louis, his picture of the bat-  
 tle of Friedland, 2273  
**Melanesia**, forms part of Australasia, 1466  
**Melbourne**, the capital of Victoria, 1358  
**Melchers**, Carl, an artist, 4152  
**Melville**, David, first lighted house with gas, 657  
**Melons**, 642; picture in colour, 650  
**Melville Bay**, picture, 4721  
**Memory**, and education, 4794  
 association of ideas in, 5029  
 how it depends on attention, 4796  
 how it may be trained, 821, 5019  
 how repetition helps it, 4795  
 how to think, 5025  
 what an act of memory involves, 4794  
 what it is, 4793, 4939  
 when it is at its best, 4794  
 why old people remember things of long ago,  
 4794  
 why we cannot remember what happened  
 when we were babies, 2458  
 why we forget some things, 2458  
**Memphis**, built by Menes, 4974

## MEN AND WOMEN

### Child's Book of Men and Women

The following are the actual headings of the  
 chapters in this section. The separate en-  
 tries appear below and in their proper places  
 in the index.

Chatterton, the wonderful boy, 5317  
**Men and Women**, conquerors of the sea, 2467  
 D'y'e ken John Peel? 5493  
 early leaders of the Church, 4707  
 famous American writers, 1475  
 famous kings of England, 2701  
 famous makers of Rome, 4945  
 famous men of science, 851  
 famous modern thinkers, 211  
 four great English poets, 3327  
 gloomy (the) King of Spain, 5498  
 great builders of London, 1157  
 great composers of music, 3243  
 great thinkers, 4617  
 heroes of the nations, 117  
 Jenny Lind, 5495  
 kings and queens of Scotland, 3079  
 life of Confucius, 5580  
 makers of telegraphs and telephones, 4313  
 men of the great rebellion, 1887  
 men who found electricity, 2113  
 men who gave us printing, 3567  
 men who made the railways, 609  
 men who made the world known, 53  
 Mrs. Hemans, the children's poet, 5468  
 Nelson, Wellington, Napoleon, 4355  
 peasant girl and empress, 5321  
 Sir Walter Raleigh, 5393  
 slaves who became famous, 2909  
 some famous missionaries, 3483  
 some famous monks, 3981  
 some famous reformers, 3697  
 some founders of religions, 2995  
 some great English writers, 4675  
 some sayings of Confucius, 5584  
 the builders of Florence, 2779  
 the emperors of Rome, 527  
 the explorers of Africa, 279  
 the first great men of Rome, 413  
 the French revolutionists, 4053  
 the great men of Greece, 1301  
 the great poets since Milton, 3903  
 the great story-tellers, 1725, 2307  
 the makers of Venice, 1249  
 the men of the Crusades, 1585  
 the men who found Australia, 353  
 the men who gave us light, 63  
 the men who mapped the skies, 1655  
 the queens of England, 2532  
 the world's great doctors, 4195  
 the writers of the hymns, 1995  
 the writers of the songs, 3737  
 twelve British statesmen, 2379  
 twelve great painters, 757

# INDEX

- Men and Women**, two men I honour, 5398  
 stories of the saints, 1007  
 what Confucianism means, 5581  
 William Postel, 5470  
 women story-tellers, 2591  
 writers of others lands, 5217  
 writers of the fairy books, 1467
- Men**, aboriginal man, picture, 51  
 appearance in America, 13  
 can only exist on earth, 3436  
 did not always write, 3978  
 drawing of man from squares, 1073  
 height has not changed much, 2673  
 homes of man in all ages, picture, 621  
 how man conquered the earth, 624  
 how races are being destroyed, 3077  
 little man by the secret shore, story, and picture, 4928  
 man does not possess less ribs than woman, 5524  
 man's sociability, 5281  
 man who disappeared, story, 1112  
 man who drove downstairs, 5694  
 man who gave away, story, and picture, 2166  
 man who knew no fear, story, 128  
 man who loved children, story, 4177  
 men who mapped the skies, 1655  
 man who thought of his comrades, story, 4968  
 probably always talked, 3978  
 search for a happy, 5689  
 the first men lived in trees and caves, 50  
 the man who saved his son, story, 1734  
 two men I honour, 5398  
 when men were good, story, 2092  
 where mankind probably first lived, 3005
- Menagerie** race, game, with picture, 4560
- Menai Straits**, bridge, 19
- Mendelssohn, Felix Bartholdy**, how he worked as a boy, 3373  
 story of his life, 3250; portrait, 3243
- Mending**, how to make old things new, 3515  
 the right way to mend things, 4249
- Mendoza, Antonio de**, gold-hunting expedition, 4506
- Menelaus**, husband of Helen of Troy, 67, 1683
- Menendez des Aviles, Pedro**, founded St. Augustine, 262
- Menes**, king of Egypt, 4785, 4974
- Men-kau-ka**, a king of Egypt, 4785
- Mentone**, ancient caves at, 2673
- Merak**, a star, 2612; pictures, 2611, 2613, 2617
- Mercurator's projection**, with picture, 1751
- Merchant of Venice, The**, play, 316
- Merica**, an old Saxon kingdom, 428
- Mercury**, a liquid element, 1290  
 element, denser than water, 542  
 first used in thermometers, 4371  
 how to tell if it is pure, 2130  
 its specific gravity, 3816  
 looks like water-silver, 1670  
 mixtures of mercury, 1869  
 not attracted by a surface, 160  
 Torricelli's experiment with, 3942  
 what it is, 154  
 what it is used for, 1294  
 why iron can float on it, 3757  
 why it does not wet our hands, 3694  
 will not rise in a tube, 4825
- Mercury**, lent aid to Perseus, 1049  
 Mercury and the woodman, fable, 2939  
 messenger of the gods, 462, 4518
- Mercury**, planet, distance from sun, 150  
 how the planet got its name, 2234  
 what is known about it, 2423  
 with Venus, picture, 2425
- Meredith, George**, famous writer, 2316,  
 on names, 4047  
 wrote a poem to the skylark, 5137
- Merida**, an ancient town in Spain, 3352
- Meridians of longitude**, what they are, with picture, 1750, 1751
- Merino sheep**, and picture, 377, 378
- Merlin**, a bird, and picture, 1845, 1846
- Merlin**, the wizard, 368, 1680
- Mermaid**, animals mistaken for, 1088  
 the mermaid's pool, legend, 465
- Merope**, daughter of Ænophon: see Hero
- Merrimac**, the, and Monitor, 2015
- Merrymind**, the little fiddler, story, with picture, 4375
- Merv**, railway to Afghanistan, 3932
- Mesmerism**, what it is, 2485
- Mesophytes**, a class of plants, 5031
- Mesopotamia**, its people, 4974  
 part of Asiatic Turkey, 3873  
 separates Persia from Arabia, 3874  
 story of its past, 4971  
 the mounds and their relics, 4971
- Messalina**, wife of Claudius, 530
- Metal**, a good conductor of heat, 4183  
 can it be poisoned? 5486  
 compounds of metals are alkalies, 1799  
 dug out of the ground, 238  
 exists in stars, 2719  
 extraction of, 5537  
 good conductor of electricity, 1293  
 how it got into the earth, 4234  
 minor metals in Canada, 5599  
 mixtures of metals are called alloys, 1870  
 moved by electro-magnet, 5471  
 used in chemical compounds, 1797  
 what it is, 1292  
 what the fatigue of metals is, 3978  
 when men used metal implements, 622  
 why it lets light through when beaten thin, 3861
- Metallic stars**, what they are, 2719
- Metal pens**, when they came into use, 3400
- Metcalf, Sir Charles**, as governor, 4100
- Meteorites**, pictures, 145, 2500  
 what people thought they were, 1577  
 what they are, 1863, 1946, 2499, 3687
- Meteorology**, science of the weather, 2504
- Meteors**, circle round the sun, 152  
 path crossed by the earth, picture, 2501  
 what they are, 2499
- Methodist Church**, founded by Wesley, 1996
- Methyl-alcohol**, is used in making methylated spirits, 1871
- Methylated spirit**, how it is made, 1871
- Metre**, a standard of measure, 3670
- Metric system**, what is the advantage of the, 5641  
 what it is, 3670
- Metropolitan Museum of Art**, founded, 4149
- Mets**, battle of, 2580
- Mennier, Constantin**, as a sculptor, 4162  
 his statue of miner resting, 4169
- Meuse River**, in Netherlands, 3455
- Mexico**, added to Spain's dominions, 3356  
 arms, picture, 4381  
 became independent, 3360  
 conquest of, 260  
 Cortez entering city of, 5089  
 flag, 4388  
 flag, picture in colour, 1640  
 history, 4381  
 horses introduced into, 269  
 legends of, 5231  
 Mexico and Central America, map, 4383  
 products, 4386  
 railway, picture, 4387  
 territory given over by, 3535, 3536  
 war with United States, 3535, 4388
- Mexico**, city, building of, 4383  
 cathedral, picture, 4391
- Mexico, Gulf of**, its shape, 4381
- Meyerbeer, Giacomo**, composer, 3252
- Mica**, in Canada, 5600  
 where it is found, 4246
- Mica-schist**, a rock, 4246, 5198
- Michael**, tsar of Russia, 3628
- Michael Angelo**, and Vittoria Colonna, picture, 4947  
 chief sculptures, 4161  
 helped to design St. Peter's Cathedral, 3020  
 his ceiling of Sistine Chapel, 4949, 4951  
 his picture, The Holy Family, 4589  
 his statue, Lorenzo de Medici, 4169, 5025  
 his statue of Moses, 4947  
 message to Paul VI., 4951  
 opinion of Donatello's St. George, 2788  
 portrait, 4945  
 portrait-statue of, 4848  
 story of his life, 4950  
 was born in Florence, 2790  
 work as a painter, 4586  
 working on picture of Last Judgment, picture, 4953
- Michigan**, admitted, 1828, 3535
- Michigan, Lake**, 1240
- Mickle, William Julius**: see Poetry Index

# INDEX

- Microbes**, are of different kinds, 903  
can stop living and start again, 4052  
have no smaller microbes on them, 4743  
help to make cream, 4340  
how they flourish in milk, 2795  
how they increase, 3383  
live in the soil, 3342  
one of the earliest forms of life, 170  
picture, 785  
supply nitrogen to plants, 3340  
what they are and do, 781  
wood is rotted by, 1988
- Micronesia**, part of Australasia, 1466
- Microscope**, cannot show the atoms in wood, 4342  
familiar things under, picture, 2321  
how to use, 2974  
little girl looking through, picture, 2319  
makes things look larger, 781  
picture of, 2320  
showing names of its parts, picture, 2974  
story of, 2319
- Midas**, king of Thrace, 556
- Midday**, where the sun is at, 78
- Midge**, a kind of mosquito, 3146
- Midshipman Easy**, the story of the book, with picture, 2200
- Midsummer Night's Dream**, A, one of Shakespeare's plays, with picture, 312, 313
- Midway Island**, note about, 2190
- Mignonette**, an annual, 233  
picture, 4419  
wild, 4424
- Migration**, of birds, 511, 2210
- Mikado**, the emperor of Japan, 363
- Milan**, an historic city, 3016
- Milan**, a wealthy manufacturing town, 3024  
the brave cardinal of Milan, 1179
- Milan Cathedral**, is built of marble, 618  
one of the wonders of the world, 3016  
pictures, 618, 1179
- Mildenhall, Sir John**, his visit to Akbar, picture, 1698
- Mildew**, how to cure plants, 1198, 3726
- Miles, Alfred H.**: see Poetry Index
- Miles, Nelson A.**, captures Porto Rico, 2188
- Milford Sound**, New Zealand, 1459
- Milk**, contains much water, 1170  
either acid or alkaline, 1799  
how a cow makes milk, 1573  
its specific gravity, 3816, 3817  
law of watering milk, 3817  
microbes in, 903  
not used in China, 376  
salts of iron in, 2698  
sour milk, 912  
used for invisible writing, 1287  
what it is, and its value as food, 2791  
why a crust forms on boiled milk, 4547  
why cream forms on it, 4340  
why does it turn sour? 5574  
why it boils over, 4231  
why thunder turns it sour, 3977
- Milk-thistle**, what it is like, 5271
- Milkweed**, picture, 5037  
swamp, 5038
- Milkwort**, picture, 5191  
sea, description, 5190
- Milky Way**, its movement, 2718  
pictures, 2609, 2715  
what it is, 1863, 2612
- Mill**, brave maid of the mill, story, 2734  
corn mill, picture, 1149  
driven by steam, 1149
- Mill, John Stuart**, life and aims, 216; portrait, 211
- Millais, Sir J. E.**, his picture, Mercy, 2071  
his picture, Sir Walter Raleigh as a boy, 843;  
figure from picture, 5025  
his sketch of Thackeray, 2312
- Miller, Emily, Joaquin, Thomas William**: see Poetry Index
- Miller, W.** interest in steamship, 2470
- Miller**, and pets, story, with picture, 3847  
puzzle of the Miller's sacks, with picture, 2139, 2260
- Millot**, used for bread, 1144
- Millimetre**, a measure, 3671
- Million**, what it means, 1932
- Millipede**, life-story, 3296; picture, 3297
- Mills, Clark**, sculpture of, 4844
- Mills, Mrs.**, helped the Earl of Nithsdale to escape, 2203
- Milne, Prof. John**, on earthquakes, 3232
- Milton, John**, and Andrew Marvell, picture, 3337  
dictating *Paradise Lost*, picture, 3337  
how many words he used, 2330  
*L'Allegro and Il Penseroso*, poems, 1557  
one of Cromwell's ministers, 1025, 1892  
playing the organ, picture, 3335  
poems: see Poetry Index  
portrait, 1999  
story of his life, 3334  
what he said about blindness, 153  
wrote *Let us with a gladsome mind*, 1995
- Milvian Bridge**, battle of, 534
- Minas Geraes**, its people, 4568
- Mind**, how different people think, 4939  
how it is built up, 5026  
how we must feel the mind, 2348  
the master of the body, 4731
- Miner**, how the miner works, with picture, 801  
miner resting, statue, 4169  
safety lamp: see Safety lamp
- Mineralogy**, a help to geology, 2883
- Mineral oil**, what it is, 3238
- Minerals**, abundant in Russia, 3746
- Miner caterpillar**, what it is, 2989
- Minerva**, a goddess, 1683
- Minerva Church**, Rome, frescoes of, 4950
- Mines**, coal-mines: see Coal-mines  
gold, with pictures, 5297  
importance of ventilation in, 4343  
lit by electricity, 4319  
of Canada, 5601
- Ming dynasty**, of China, 112
- Ministers**, the four wise ministers, story, and picture in colour, 4927
- Mink**, description, 4820
- Minnesota**, admitted, 1836, 3536
- Minnow**, fish, 2681; picture, 2679
- Minotaur**, story, unravelled, 5122
- Minster**, Isle of Thanet, 428
- Minstrel Queen of Spain**, story, 1432
- Minstrels**, songs written for, 2954-5
- Mint**, plant, a useful herb, 3176
- Mint, the**, built by Wren, 1164  
cannot pay the National Debt, 2621  
picture, 536
- Minto, Earl of**, governor-general, 4106
- Minute Man (the)**, picture of, 4845  
statue, 4846
- Mirabeau, Honoré, Comte de**, 4064  
portrait, 4063
- Mirage**, what it is, 3090; pictures, 5018
- Miriam**, in the Marble Faun, 5433
- Mirrors**, are silvered with mercury, 1294  
how they reflect things not in front of them, 5167  
the mysterious portrait, story, with picture, 5161  
why faces looked crooked in, 1572
- Missel-thrush**, brings up other birds, 2058  
egg, picture, 1744
- Missionaries**, early missionaries, 4707  
hated in China, 114  
in Hawaii, 2181  
Jesuit in New France, 890
- Missionary Ridge**, battle of, 2018
- Mississippi**, admitted, 1824, 3534  
secedes, 2010, 3536
- Mississippi River**, claims to valley of, 882  
dredged, 3537  
exploration of, 260, 264  
its course, 4381  
its length, 4498
- Missouri**, admitted, 1826, 3534  
a slave state, 2010  
prevented from seceding, 2012
- Missouri Compromise**, did not settle slavery question, 2008, 2009  
what it was, 1825, 1826
- Mist**, in valley of Medway, picture, 3545  
what it is made of, 1644  
what makes mist at night, 3545
- Mistakes**, that are made every day, 5524
- Mistletoe**, grows on wild apple-tree, 3445  
lives on other plants, 3830
- Mistletoe Bough, The**, song, picture, 3739
- Mitchell's Fold**, Shropshire, legend of, 2744
- Mites**, belong to same class as spiders, 3304  
picture, 3297

# INDEX

- Mitford, Mary**, life, 2595; with portrait, 2593  
poems: see Poetry Index
- Mithridates**, the Great, Parthian king, 5065
- Mitre Peak**, Milford Sound, picture, 1459
- Mixed nerve**, controls motion, 2627
- Mixture**, differs from a compound, 1040, 1665  
what a mixture is, 937
- Moa**, a bird, 47, 1424; picture, 1425
- Mobile**, battle of, 2019
- Mobile liquids**, what they are, 2505
- Mocking-bird**, 2060; picture, 2055
- Mocking-thrush**, mocking-bird, 2060
- Modelling**, in sand, 3821
- Models**, glass models of objects of natural history, 4902
- Modeltown**, chapel, with pictures, 1502  
church, with pictures, 923  
farm, with pictures, 1199, 1282, 1351  
finishing Modeltown, with pictures, 4673  
fire-station, with pictures, 2352  
gasworks, with pictures, 2687  
hotel and restaurant, with pictures, 2035  
how to make a town, 333  
parsonage, with pictures, 1611  
preparing for Modeltown, with pictures, 445, 446, 447  
shop, with pictures, 570, 571, 720, 721  
the cottages, with pictures, 447, 448  
villa, with pictures, 832, 833
- Moertherium's skull**, picture, 3679
- Moffatt, Robert**, his life, 282, 3488; picture, 3483
- Mogul Empire**, founded by Babar, 1702
- Moguls**, conquered India, 1548, 1550  
emperors of India, 1706  
Great Mogul, 1702
- Mohacs**, battle, won by the Turks, 2854
- Mohammed**, dictating the Koran, picture, 2999  
did not write Koran, 5524  
founded Islamism, 1585, 3876  
his birthplace, picture, 3001  
his faith, 3152; with portrait, 2995  
his life and teaching, 3002  
wrote down his dreams, 5098
- Mohammed II.**, 3156; portrait, 3149
- Mohammed IV.**, 3629
- Mohammed Ali**, rule in Egypt, 4258
- Mohammedanism**, arose in Arabia, 3874  
caused war, 3152  
religion of Central Asia, 3934  
what it teaches, 3002
- Mohammedans**, conquered Egypt, 4256  
conquered Persia, 3878, 5066  
followers of Mohammed, 1550, 1585  
how their conquests spread, 3876  
invaded India, 1700  
invaded Spain and France, 3353  
Mohammedan at prayers, picture, 1701  
their sacred book, 5098
- Moissan, Henri**, has shown there is a low-temperature chemistry, 4051
- Moisture**, how to keep ground moist, 3514
- Molars**, back teeth, 2099
- Moldavia**, an independent kingdom, 3150  
under Russian and Turkish rule, 3158  
part of Roumania, 3220
- Mole**, its home, 5412, 5414, with picture, 673, 674
- Mole cricket**, picture in colour, face 3140
- Molecules**, what they are, 1039, 1666, 4365
- Molière, Jean P. de**, dining with Louis XIV., picture, 5216  
life and writings, 5220
- Molinia**, purple, with picture, 1342
- Mollusc**, a soft-bodied animal, 2583  
picture, 2589  
two famous molluscs, 2587
- Moloch**, lizard, with picture, 1220, 1226
- Molokai**, islands where lepers are confined, 2182
- Moltke, General**, at Versailles, picture, 2581  
defeated Austrians, 2579
- Mombasa**, railway to Uganda, 4260
- Monpesson, William** and **Catherine**, fought the Plague, 625
- Mona**, and the forsaken merman, story, with picture, 958, 959
- Mona Lisa**, picture, 4589
- Monals**, pheasants, 1515
- Monasteries**, destroyed, 844
- Monck, General**, fought against the Dutch, 3463  
portrait, 519  
soldier of the Commonwealth, 1027
- Monck, Lord**, as governor-general, 4102  
first governor-general, 4106
- Moncton**, manufacturing centre, 5604
- Monday**, how it got its name, 83, 4532
- Money**, beaver-skin as a substitute for, 5150  
Confederate, 2019  
decimal system adopted, 3533  
how it is made, with pictures, 536  
how the conjurer makes his money, 1508  
things of no value used as money, 4342  
what it is, 535
- Mongolia**, history, 3933; with map, 3933  
province of China, 105  
where it is, 3932
- Mongolian Plateau**, 3932
- Mongols**, driven out of China, 112  
history, 3933  
invaded Japan, 364  
invaded Russia, 3624  
invaded south-west Asia, 3878  
Mongol gentleman, picture, 3939
- Mongoose**, with picture, 137, 141
- Monitor**, lizard, 1218; picture, 1225
- Monitor, the**, and Merrimac, 2015  
built, 2014
- Monk, George**: see Monck, General
- Monkey**, different kinds, 606  
help in the study of disease, 3079  
its love for its young, 5134  
pictures, 48, 605  
prove the existence of a continent, 3005  
sacred in India, 605, 606  
the sounds they make, 1269
- Monkey-nut**, or pea-nut, 1966
- Monkeys**, Hundred Thousand Monkeys, a story, 5655
- Monkey's Face**, rock, with picture, 1059
- Monks**, turned burglars, story, 4639  
who were famous, 3981
- Monkshead**, 5270; picture, 5276
- Mono-rail system**, Brussels railway, picture, 91  
gyroscope train, pictures, 90  
how trains run, 89  
Kearney system, picture, 91  
toy train and boy, picture, 89  
Wupper Valley railway, picture, 91
- Monroe, James**, administration, 3534  
as president, 1825, 1826  
picture, 3532
- Monroe Doctrine**, application of, to Cuba, 3538  
came into existence, 3534
- Monserat**, limes grown at, 1877
- Monsoons**, Indian winds, 1518
- Monsters**, giant monsters of the sea, pictures, 1083  
great monsters of the past, picture, 50  
how we find remains, 46, 48
- Montaigne, Michel Eyquem de**, life and writings, 5220; portrait, 5217
- Montana**, admitted, 3537
- Montana**, in Othello, 474
- Montbretia**, plant, picture, 5280
- Montcalm, Marquis de**, at Fort William Henry, 884, 885  
at Quebec, and death, 885, 3622  
defeated by Wolfe, 1094  
killed at Quebec, 1218
- Monteagle, Lord**, and Gunpowder Plot, 1792
- Monte Cristo**, Count of, story of the book, 4325, 4407
- Monte Cristo's Island**, off Marseilles, 2397
- Montenegro**, flag, picture in colour, history, 3224  
national costume, picture, 3225
- Monterey**, battle of, 1832
- Monterey**, picture, 4573
- Montezuma**, emperor of Mexico, 4382, 4383  
meeting with Cortez, 260, 5069
- Montfort, John de**, story of his wife, 2478
- Montfort, Simon de**, founded House of Com-mons, 2067  
led barons, 600
- Montgomery, James**: see Poetry Index
- Montgomery, Richard**, killed at Montreal, 984, 3898
- Months**, getting longer, 37, 2281  
how they are made, 2220  
how they got their names, 4532, 4515
- Monthyon, Baron de**, lawyer, 1054
- Monticello**, picture of, 789
- Montreal**, appearance of, 5428



# INDEX

- Montreal**, captured, 3898  
how it was founded, 1246  
how it was saved from the Indians, 1247  
Liverpool of Canada, 1240  
scenes in, picture, 4103  
view of city, 5612
- Montrose, Marquis of**, fought for Charles I., 1896; portrait, 1896
- Mont Royal**, discovered and named, 3618
- Monts, Sieur de**, holds fur monopoly in Canada, 3619
- Monuments**, a talk about them, 5003  
Washington (The) Monument, 1714  
with pictures on them, 5098
- Moody, Dwight Lyman**, story of his work, with picture, 1998, 1999
- Moon**, a dead planet, 61, 284  
affects rivers, 3091  
called Luna by the ancients, 2234  
changes of temperature, 4321  
circles round the earth, 147  
distance from the earth, 34  
getting farther away from earth, 2281  
harmless to us in our sleep, 3378  
has no inhabitants, 910  
heat inside, 3237  
hides the sun, 2086  
how it was formed, 311  
is quite dry, 3072  
its eclipse, 1862, 3431  
its other side, 2282  
its path, 2219  
lamp of night, 2219  
makes the tides, 33, 361, 2280  
man in the moon, legend, 4277  
may have tides itself, 2280  
pulls the earth, 34  
rate of travel, 34  
size compared to our earth, 1367  
spins upon itself, 2281  
there are many moons, 147  
what its marks are, 3031  
what the earth would look like from the moon, 4345  
where its atmosphere has gone, 3690  
why it appears to travel with us, 2672  
why it grows brighter as sun sets, 3690  
why we can see its whole circle when it is not shining, 4116  
will probably return to the earth, 4342
- Pictures of Moon**  
blotting out the sun, 1862  
circles round the earth, 147  
eclipse, 1865  
looking at it through a telescope, 2221  
moons Galileo saw, 147  
moon's surface, 2223  
picture-map of the moon, 2222  
with the earth in space, 149  
volcano called Plato, 2223
- Moore, Clement C.**: see Poetry Index
- Moore, Sir John**, great soldier, 701, 3360
- Moore, Tom**, wrote Irish songs, 3742
- Moore's Creek**, battle of, 986  
poems: see Poetry Index  
portrait, 3737
- Moor-hen**: see Water-hen
- Mooring**, of a ship, 4565
- Moors**, invaded Italy, 3014  
invaded Spain and France, 2064, 3353, 3356  
surrendering Granada, picture, 3355
- Moose Jaw**, Canadian town, 5368
- Moosewood**: see Maple, striped
- Moran, John**, subject of yellow fever experiment, 3201
- Moran, Thomas**, and the Rocky Mts., 4149
- Morava River**, in Servia, 3222
- Moravia**, Moravian missionaries, 3483  
wool manufacture, 2858
- Moraviantown**, battle of, 3901
- Mordaunt, Sir Charles**, saw eagles attack deer, 1842
- Mordella beetle**, its wonderful eye, 3260
- More, Sir Thomas**, condemned to death, picture, 5069  
died for his religion, 5067  
friendship with Erasmus, 3156  
his daughter's love for him, story, with picture, 1298, 1299  
statesman, 844
- Morea**, The, French troops landed, 3220  
part of Greece, 3150
- Moreau, J. Victor**, general, routed the Austrians, 1035  
won battle of Hohenlinden, 4360
- Morelia**, named after Morelos, 4388
- Morelos**, rebelled against Spaniards, 4386
- Morgan, Daniel**, at Cowpens, 992  
during Revolution, 984, 988  
portrait, 985
- Morgan, Mrs.**, helped the earl of Nithsdale to escape, 2203
- Morgarten**, battle of, 2966
- Morley, Lord**, on Rousseau, 211
- Mormonism** in United States, 1833
- Morocco**, flag of Morocco, picture in colour, 1640  
its unsettled state, 4261  
lonely old woman, story, 5316
- Moros**, origin of, 2184
- Morris, William**, poems: see Poetry Index  
taught men to strive for beauty, 3704
- Morris dances**, with pictures, 2765
- Morrison, Charles**, his ideas about the telegraph, 4314
- Morrison, Robert**, life, 3486; portrait, 3483
- Morse, Samuel**, invented telegraph, 3535  
life, as inventor, 2668  
pictures, 2437, 4315  
what he did for telegraphy, 2474, 4316
- Morse code**, what it is, with picture, 3521
- Mortar**, holds bricks together, 617  
how it is made, 2557
- Mosaic work**, came into use, 4585  
how it is done, 1991  
picture and chapel in mosaic, pictures, 1991  
Roman factory, 1990
- Moscow**, burnt by the Russians, 3632  
burnt by the Tartars, 3626  
how Napoleon marched to Moscow, 2276  
how the French reached Moscow, story, 2094  
invaded by the Poles, 3623  
picture, 3744  
plague outbreak, 3631  
what it is like, 3748
- Moses**, a slave from his birth, 2910  
as a doctor, 4196  
statue by Michael Angelo, with picture, 4952, 4947
- Moskva River**, in Russia, 3748
- Moslems**, Mohammedans, 1585, 3001
- Mosquito**, causes malaria, 5641  
how it causes fever and malaria, 1386, 1789  
in Panama, 5333  
its life-story, 3146; with picture, 3143  
part played in yellow fever, 3201  
the harm it does, 3145
- Moss-campion**, description, 4834  
picture, 4837
- Moss insect**, looks like a twig, 3415
- Moth**, British species, picture in colour, face 2983  
feeler, through microscope, picture, 2326  
head, through microscope, picture, 2323  
hiding from foes, picture, 3413  
how to tell a moth, 2985  
kept away by camphor, 4121  
not kept from clothes by odours, 5524  
only their maggots eat clothes, 5524  
various kinds, 2983  
why it flies round a candle, 1986
- Mother and her child**, picture, 763
- Mother Carey's chicken**, name for stormy petrel, 1626
- Mother-of-pearl**, lining of oyster shell, 171
- "Mother of the Presidents,"** Virginia called, 1398
- Moti Masjid**, Pearl mosque in Agra, 1550
- Motion**, different kinds of, 3468  
everything moves, 64, 2507  
first law of motion, 1577, 2879  
horses on a roundabout, 777  
how fast a person walks in a train, 777  
how forces act on a moving body, 3674  
how to measure time and space, 3669  
how we recognise movement, 77, 78, 1578, 3468  
it cannot be weighed, 4048  
molar and molecular motion, 4365  
movement changes matter, 3465  
Newton's laws, 3469, 4744  
perpetual motion, 3550  
unconscious, 5578  
why things move, 3547

# INDEX

**Motor-cars**, making children's cars, pictures, 746  
 perfecting of, 2670  
 what makes them move, with pictures, 1771  
 why they have numbers, 1576  
**Motor nerve**, moves the muscles, 2628  
**Motor race**, game, with picture, 4242  
**Mouflon**, sheep, with picture, 377, 378  
**Mould**, what it is, 3830  
**Moulding**, of a picture frame, 1923  
**Mound birds**, build mounds, 1520  
**Mountain ash**, how its fruit is made up, 4110  
 what it is like, with picture, 3448  
**Mountain clematis**, 5270  
**Mountain Creek**, bridge, with picture, 29  
**Mountain finch**, with picture, 2058, 2059  
**Mountain lion**: see Puma  
**Mountain plants**, for rock gardens, 1928  
**Mountains**, Alps, 5669  
 character and peaks of Canadian, 5607  
 formation of ranges, picture, 3230  
 how formed, 404, 2881, 3227, 3859  
 how to measure their height, 776  
 in the moon, 2222  
 may form islands, 3004  
 measurement by barometer, with picture, 3945, 3946  
 mountain top above clouds, picture, 3693  
 of the United Kingdom, 5017  
 the highest in the eastern part of the United States, 10  
**Mountains**, White, scene pictured, 18  
 why it is colder on the top, 776  
 why snow does not increase height, 3859  
**Mountains of Heaven**, 3931  
**Mount McKinley**, highest mountain in North America, 2178  
**Mount Vernon**, picture, 789  
**Mouse**, different kinds of mice, 770  
 how cats keep mice down, 45  
 mice who wished to bell the cat, story, with picture, 463  
 picture, 771  
 the convict's friend, story, 499  
 town and country mouse, fable, 3124  
**Mouth**, eating with the, 2205  
 how the teeth are formed, 2097  
**Mozart, Maria Anna**, went on a musical tour with her brother, 3248  
**Mozart, W. A.**, his life-story, 3248  
 loved music as a boy, 5055  
 pictures, 3243, 3247  
**Much Ado about Nothing**, story of the play, 551  
**Muchelney**, legend of, 3312  
**Mucius, Cains**, how he braved death, 3884  
**Mucous membrane**, lines the mouth, 2205  
 lines the stomach, 2344  
**Mucus**, produced in the mouth, 2205  
**Mud**, how it is formed, 2886  
**Mud-fish**, 2446, 2448: picture, 2447  
**Mud huts**, in South Africa, picture, 1767  
**Mud-skipper**, fish, with picture, 210  
**Mulberry-tree**, picture, 1807  
**Mules**, carry loads up mountains, 271  
 intelligence of, 5330  
 picture, 271  
 production of in U. S., 2658  
 tractors drawn by mules, 272  
 what they are like, 272  
**Mülhausen**, town in Germany, 2754  
**Müller, J.**, law about nerves, 2798  
**Müller, Max**, on English language, 2330  
 what he said about the alphabet, 3390  
**Mulock, Dinah Maria**, Mrs. Craik, 2599  
 story, John Halifax, Gentleman, with pictures, 3923  
 See also Poetry Index

**Mummies**, of Egypt, 4780  
**Munich**, capital of Bavaria, 2576, 2754  
**Munkasy, Michael**, his picture of Milton dictating Paradise Lost, 3337  
**Murcia**, province of Spain, 3353  
**Murdock, William**, his engine, picture, 613  
 invented coal-gas, 610, 655  
**Murena**, sea-eel, 2451  
 pictures, 2449, face 200, in colour  
**Murfree, Mary Noailles**, life, 2049  
**Murresborough**, battle of, 2016  
**Murillo**, a great artist, 3358, 3361

**Murimuth, Adam**, kept a chronicle of English history, 750  
**Murray, General**, in Canada, 3897  
**Murray Bay**, appearance of town, 5428  
**Murray River**, in Australia, 1362  
**Muschenbroek**, discovered Leyden jar, 2115  
**Muscle**, a wonderful machine, 4367  
 muscles and their masters, 2625  
 pictures, 2624, 2625  
**Muscovites**, Russians, 3626  
**Muses**, goddesses, 1273  
**Museum**, boy's home museum, 3613  
**Museum of Fine Arts**, Boston, founded, 4149  
**Museum of Natural History**, description of, with pictures, 4901  
 picture, 5182  
**Musgrave family**, of Edenhall, 3166  
**Mushroom**, has no green colour, 228  
**Music**, adding of black notes on the piano, 4862  
 addresses of the fairies, with picture, 1692  
 beautiful land of sound, 3133  
 common chord, 4861  
 common time, 3495  
 different sounds of different instruments, 4863, 4864  
 distinguishing notes in minor scales, 5236  
 fairies and the kind goblins, 4910  
 fairies in the tulips, 1450  
 fairies inside the shells, 1691  
 fairies of music and their names and homes, with pictures, 250, 251, 252  
 fairy ladders called scales, 4534  
 finger exercise, 4301  
**Music**, first little exercise, 3494  
 games with the piano fairies, 491, 3373, 3426, 3427  
 goblins and the fairy ladders, 5118  
 great composers, 3243  
 homes of the little goblins, 2413  
 how a good singer uses his voice, 4916  
 how a musician thinks, 4944  
 how to mend torn music, 4249  
 how to strike the piano notes, 3785  
 Jenny Lind, 5495  
 king semibreve and his court, 1933  
 laws of music, 4859  
 learning a new exercise, 4238  
 little song without words, 4465  
 map the fairies made, with picture, 2892, 2893  
 more about the fairy ladders, 4607  
 music and noise, 4757  
 note the fairies hid away, 4754  
 overtones or harmonics, 2620, 4864, 4913  
 pitch of musical notes, 4582, 4759  
 playing our first little piece, 4093  
 procession in Treble Road, 971  
 relation between notes, 4860  
 relation to arithmetic, 4861  
 roads the fairies travel on, 731  
 scales, 4862, 5054  
 sleepy arm game of the fairies, 3291  
 spaces between the notes, 3711  
 strange caps that the fairies wear, 2173  
 the fairy meeting on Bass Road, 1211  
 the goblins on left side of the fairies, 2652  
 use of discords, 4918  
 what harmony is, 2620  
 what music is, 509  
 what out of tune means, 4862  
 when the fairies want to rest, 4037  
 why do some notes agree and others make a discord, 5686  
 wonderful land of sound, 250

## See also Harmony

**Musical glasses**, how to use them, with picture, 4461  
**Musical instruments**, the first kinds, 1015  
**Musk**, how to grow it, 1074, 1350  
 its strong scent, 1571  
**Musk mallow**, with picture,  
**Musk-ox**, a strange animal, 378, 3410  
 picture, 377  
**Musk-rat**, description, 4818  
 how hunted, with picture, 2732  
**Muslin**, how it got its name, 4532  
**Mussel**, its life-story, 2588  
 pictures, 2589, 2590  
 where it grows, with picture, 3772  
**Musulmans**, Mohammedans, 1550  
**Mustard**, why it burns the tongue, 2450

# INDEX

**Mycale**, battle of, 5129  
**Mycene**, Gate of Lions, 5004  
 palace unearthed, 5122  
 picture, 5008  
**Myra**, battle of, 5262  
**Myllar, Andrew**, printer, 3572  
**Myloodon**, animal like the great sloth, 49  
**Myra**, bird that speaks, 1747  
**Myron**, Greek sculptor, 4160  
**Myrtle**, bog, picture, 5037  
**Myssore**, state of, defied the British, 1706  
**Mystery-writing**, various kinds, 4137  
**Mytyl**, in the Blue Bird, 5083

**N**

**Nabonidas**, king of Babylon, 4984, 5058  
**Nabopolassar**, founded new Babylonian empire, 4983, 5057  
 joined the Medes, 4982  
**Nagasaki**, port of Japan, 366, 370  
**Nag's Head**, rock, and picture, 1059  
**Naihe**, public orator of Hawaii, 2491  
**Nails**, straightening bent nails, 338  
 to hammer in, 5523  
**Nails**, how the white marks are caused, 4232  
 pictures, 1961  
 what our nails are, 156, 1961, 1986  
**Nairne, Caroline Oliphant, Baroness**, song-writer, and portrait, 3742  
**Name pictures**, how to make them, 4138  
**Names**, buried names puzzle, 4351, 4458  
 English place names, 427, 5387  
 hidden names of plants, picture puzzle, 4999, 5114  
 how flowers got their names, 5115  
 how people got their names, 4751, 4907  
 why plants have Latin names, 4235  
 why we have names, 678, 2234  
**Nana Sahib**, Indian rebel leader, 1706  
**Nancy**, cotton and metal work, 2396  
**Nanking**, town on Yang-tse river, 115  
 treaty of, 112  
**Nanking Mountains**, in south China, 106  
**Nansen, Dr.**, attempt to reach the North Pole, 4726  
 crossed Greenland, 4724  
 meeting with Jackson, 4726  
 portrait, 4725  
**Nan-shan Mountains**, in China, 110  
**Nantes, Edict of**, 2070  
**Napier, David**, his steamboat, 2472  
**Naples**, 3020, 3024; picture, 3023  
**Napo, Rio**, leads to the Amazon, 4505  
**Napoleon I.**, attack on Moscow, 2084  
 campaign in Egypt and Europe, 2274, 4258  
 conquered Lombardy, 3358  
 crossed the Alps, 2876  
 defeated at Waterloo, 1095, 3464  
 defeated the Austrians, 2530  
 England's fear of invasion, 2710  
 formed the Ligurian Republic, 3016  
 fought with the Russians, 3631  
 gave Tyrol to King of Bavaria, 122  
 his life, 4355  
 his overthrow at Waterloo, with pictures, 5362  
 his war emblem, 1640  
 his wonderful escape, 4227  
 how he came from Elba, story, 812  
 how he conquered Europe, 2575  
 how he rode from Waterloo, story, 3504  
 invaded Italy, 3020  
 invaded Switzerland, 2967  
 made his brothers kings, 2276  
 Mallet's rebellion, 330  
 occupied Spain, 3360  
 ordered Arc de Triomphe to be built, 5005  
 supported by Denmark, 3597  
 the bird that he set free, story, 1298  
 tomb of, with picture, 5337  
 took the bronze horses to Paris, 3018  
 would not believe in steam power, 2471

**Pictures of Napoleon**

army cheering the emperor, 2273  
 as a boy, 4358  
 at a cottage hearth, 1489  
 at Arcola, 4361  
 at school at Brienne, in colour, 4356  
 escaping after Waterloo, 3503  
 in St. Helena, 4363

**Napoleon I.**, Napoleon and Robert Fulton, 2471  
 Napoleon's son, King of Rome, 331  
 portraits, 2267, 4355  
 retreat from Moscow, 2275  
 riding through Moscow, 3631  
 triumph over hostile troops, 812  
**Napoleon III.**, defeated the Austrians, 3021  
 made Maximilian emperor of Mexico, 4390  
 meeting Bismarck, picture, 2577  
 nephew of Napoleon I., 2277  
**Narcissus**, different kinds, 5272  
 grown in bowls, 1816  
 in gardens, 5272  
**Nares, Captain**, attempt to reach the North Pole, and portrait, 4724, 4725  
**Narses**, slave, story of his life, 2911  
**Narwhal**, whale with a long horn, 1088  
**Naseby**, battle of, 1888, 1895  
**Nasturtium**, an annual, 233, 927  
 how it guards its nectar, 3736  
 its seed-pod, 579  
**Natal**, country in South Africa, 1768  
 people of Natal, picture, 1765  
**Nation**, our lives and the nation, 5281  
**National Assembly of France**, 2268  
**Natural History**: see also Museum of Natural History

## NATURE

### Child's Book of Nature

The following are the actual headings of the chapters in this section. The separate entries appear below and in their proper places in the index.

American trees in summer, 5621  
 American trees in winter, 5437  
 animals living in the sea, 1081  
 animals that feed and clothe us, 375  
 animals that fly and burrow, 765  
 animals that puzzle us, 359  
 animals that serve man, 269  
 animals that work for Nature, 131  
 animals with wonderful coats, 3407  
 big fish of sea and river, 2443  
 birds that cannot fly, 1423  
 birds that serve us, 1513  
 birds that swim and climb, 1951  
 butterflies and moths, 2983  
 everything a part of Nature, 3240  
 familiar bird friends, 2209  
 fish of the rivers and lakes, 2675  
 flowers of British authors, 4606  
 flowers of rocky places, 4833  
 flowers of the garden, 5269  
 flowers of the marshes, 5031  
 flowers of the seaside, 5185  
 flowers of the stream, 4961  
 homes not made with hands, 5411  
 how a flower is born, 3731  
 how animals talk to each other, 5323  
 how plants travel, 3827  
 little known British flowers, 4417  
 Nature's great family, 3675  
 Nature's little workmen, 665  
 Nature's winged huntsmen, 1839  
 Nature's wonderful family, 45  
 our animal friends, 499  
 plants of two worlds, 4285  
 poetry of Nature, 2192  
 reptiles, the oldest animals, 1217  
 roadside plants and weeds, 4185  
 sea animals in armour, 2583  
 smaller fishes of the sea, 201  
 some insect foes of man, 3139  
 some insect friends of man, 3255  
 some striking American shrubs, 4487  
 some very strange beasts, 995  
 the animals most like men, 601  
 the bees and wasps, 2815  
 the birds of beauty, 1737  
 the birds of the ocean, 1625  
 the families of plants, 4109  
 the great snake family, 1373  
 the habits of flowers, 3949  
 the singing birds, 2051  
 the wonder of a piece of silk, 1805  
 the world in the waters, 2335  
 things that creep and crawl, 3295  
 unknown animals, 5567  
 why so much of Nature is green, 2375

- Naucrates**, famous Greek city, 4790  
**Nauvoo**, 1834  
**Navaretta**, battle of, 2806  
**Navarino Bay**, battle of, 3220  
**Navigator Islands**: see Samoa  
**Navy**, enlarged, 3537  
 Marine Commission appointed by Continental Congress, beginning of American navy, 2897  
 reconstruction of, 2900  
 the U. S. Navy Department, 1596  
 victories in the several American wars, 2897-2902  
**Nawab**, title of a ruler in Bengal, 1704  
**Neale, John Mason**, wrote hymns, 1997  
**Neap tides**, their cause, 2281  
**Nebo**, Babylonian god, 4983  
**Nebraska**, admitted, 3537  
 made into a territory, 3536  
 organised as territory, 2009  
**Nebuchadnezzar**, his madness, picture, 4979  
 story of his reign, 4983  
**Nebulæ**, pictures, 2863, 2865  
 what is known of them, 2861  
 what they are, 307, 1948  
**Necker, Madame**, her life, 4682  
**Necklace**, for a doll, 2033  
**Nectar**, how the bee takes it, 2326  
**Needle**, attached to tuning-fork, picture, 4757  
 how to use it, 456  
 the eye magnified, picture, 2325  
 weighs the same when magnetised, 3761  
**Needle**, mountain, picture, 5017  
**Needle-case**, butterfly needle-book, and picture, 4998  
 how to make, and picture, 2871, 2872  
**Negative**, in photography, 39  
**Negative electricity**, discovery, 2115  
**Negritos**, in Philippines, 2182, 2187  
**Negroes**, 516, 1825  
 a negro basket maker, picture, 3104  
 coloured man at the North Pole, 5213  
 coloured man, J. B. Hill, stops a runaway, 3108  
 given right to vote, 2024, 3536  
 how they went to America, 1766  
 man and his negro servant, fable, and picture, 4805  
 negro melodies, 2964  
     **See also Slavery**  
**Negro River**, joins the Manaos, 4567  
**Nehemiah**, cupbearer to Artaxerxes, 5064  
**Nelson, Dr. Wolfred**, banished from Canada, 4097  
**Nelson, Horatio**, about to join his ship, picture, 4357  
 as a midshipman, picture, 4360  
 battle of the Nile, 2274  
 blockaded Malta, 1876  
 buried at St. Paul's, 1095  
 dying, picture, 4359  
 his life, 4358  
 his words before Trafalgar, 3440  
 kind of ships he had, 74  
 landing at Yarmouth, picture, 4359  
 last words of Admiral, 5618  
 portrait, 4355  
 won Trafalgar, 3360  
**Nelson**, a province of New Zealand, 1464  
**Nelson's Column**, 5004; picture, 5011  
**Neon**, an element in argon, 1295  
 made from radium, 1419  
**Nepal**, war with the British, 1706  
**Nepenthes**, plant, with pictures, 3541  
**Neptune**, distance from the sun, 150, 151  
 the outermost planet, 1944  
 what is known about it, 2429  
**Nerbudda River**, divides India, 1546  
**Nereides and Cassiopeia**, 3314  
**Nero**, and the burning of Rome, 2268  
 began the Corinth Canal, 5014  
 his cruelty, 4946  
 persecuted the Christians, 626, 2911  
 portrait, 530  
 ruled after Claudius, 530  
**Nerva**, emperor of Rome, 531  
**Nerve-cells**, pictures, 1103, 3561  
 what they are, 1446  
**Nerve-current**, its action, 3872  
**Nerves**, forest of nerves within us, 3561  
 how they can avoid pain, 4343  
 how they control the muscles, 2627  
**Nerves**, how they govern the heart, 1583  
 nerves of the body, picture, 3565  
 what they are, 1102  
**Nervousness**, effect on beat of heart, 5016  
**Nervous system**, controls movement, 2454  
 what it is, 3563  
**Nestor**, a Greek, 67  
**Netherlands**, added to German states, 2527  
 freedom from the Spanish yoke, 3358  
 heroes of the Netherlands, story, 5171  
 map, 3463  
 religious persecution, 3356  
**Nettle**, pictures, 2321, 3831  
 stinging nettle, 780  
**Neuchâtel**, famous for watches, 2968  
**Neuchâtel, Lake**, in Switzerland, 2960  
**Neutral reaction**, what it is, 1799  
**Nevada**, admitted, 3536  
**Nevada Falls**, in Yosemite valley, 322  
**Neva River**, 3630  
**Nevils**, exports sugar, 1877  
**Nevitte, Dorothy Eliza**: see Southworth, Mrs.  
**Nevski Prospect**, Russian street, 3748; picture, 3749  
**New Amsterdam**, colony of, 520, 521  
**Newark (Niagara)**, assembly of Upper Canada  
 first met there, 3900  
**New Bern**, 523  
**Newbold, Charles**, as inventor, 2668  
**Newbolt, Henry**: see Poetry Index  
**New Brunswick**, becomes a province, 3900  
 description of, 5604  
 province of Canada, 1244  
**New Caledonia**, house, picture, 1465  
**New Carthage**, city of Spain, 414  
 colony of the Phœnicians, 5122  
**New Castle**, province of Spain, 3353  
**Newcombe, Professor**, on geography and Greenwich Observatory, 1664  
 what he said about nebulæ, 2861  
**Newcomen, Thomas**, made one of the first steam-engines, 610  
**Newcomen, The**, the story of the book, and pictures, 3603  
**New England**, named by Capt. John Smith, 516, 3621  
 proposes to leave Union, 1400  
**New Forest** in Hampshire, 436  
 the fairy of the New Forest, legend, 3648  
**Newfoundland**, discovered, 843; 3617  
 fish industry, picture, 4099  
 fishing banks visited by French, 3619  
 has great fisheries, 1244  
 its chief industry, 202  
**Newfoundland dog**, 500; picture, 498  
**New France**, made a royal province, 3621  
**Newgate**, the prison, 1297  
**New Glasgow, Can.**, mining town, 5601  
**New Guinea**, north of Torres Straits, 1466  
**New Guinea bird of paradise**, 1738  
**New Hampshire**, colony of, 525  
**New Haven (Conn.)**, colony annexed to Connecticut, 524  
**New Hebrides**, house on stilts, picture, 1465  
**New Jersey**, colony of, 521  
**Newman, John Henry**, poem: see Poetry Index  
 portrait, 1995  
 wrote hymns, 1995, 2000  
**Newmarket**, Byard's famous leap, 3208  
**New Mexico**, territory surrendered by Mexico, 1832  
**New Netherland**, colony of, 520  
**New Orleans**, battles of, 1400, 2014  
 benefited by dredging of the Mississippi, 3537  
**New Siberian Islands**, position, 3752  
**New South Wales**, claimed for England, 355  
 explored by Captain Cook, 1356  
 homestead, picture, 1363  
 what kind of country it is, 1360  
**Newspaper**, how can it be made for a penny, 5382  
**New Sweden**, colony of, 521  
**Newt**, life-story, 1222; picture, 1228  
**Newton, Sir Isaac**, boyhood, 303  
 discovered the law of gravitation, 308, 1661, 1944, 2428, 3240, 3547  
 experiment with light, 5177  
 his laws of motion, 3469, 4744  
 his mistake about light, 5040  
 one of our great men of learning, 1100  
 studied electricity, 2114

# INDEX

- Newton, Sir Isaac**, studying sunlight, picture, 1663  
 what he thought of light, 1267, 2797
- New York**, 521  
 description of upper part with pictures, 5179  
 history and description, with pictures, 4307  
 public library, picture, 5183  
 Singer and Flat-iron buildings, picture, 2663  
 skyline, picture, 2667  
 skyscrapers, 2663  
 Statue of Liberty, picture, 2666  
 story of Knickerbocker days, 2245  
 view of Broadway, picture, 2421  
 what it does for its children, with pictures, 3193
- New Zealand**, climate and products, 1462  
 discovery by Captain Cook, 1459  
 flag, picture in colour, face 1640  
 its position, 63  
 map, 1459  
 Parliament, 1464  
 population, 1466  
 story of New Zealand, 1459  
 the Maoris, 1459  
 watercross introduced, 4967
- New Zealand wood-hen**, bird, 1430
- Ngami, Lake**, discovered, 282
- Niagara, the**, a brig, 4279
- Niagara Falls**, in America, 680, 1240  
 pictures, 680, 681
- Niagara River**, 20, 680
- Niasi Bey**, Young Turk leader, 3226
- Nicaragua**, an independent republic, 4392  
 flag, picture in colour, face 1640
- Niccolo, Pietro**, famous sculptor, 1254
- Nice**, town on the Riviera, 2398
- Nicholas I.**, tsar of Russia, reign, 3632
- Nicholas II.**, tsar of Russia, 3632
- Nicholas III.**, pope, 4948
- Nicholas V.**, pope, 4946, 4948
- Nicholas, St.**, real Santa Claus, 1013; picture, 1006
- Nicholas Nickleby**, story of the novel, and pictures, 2633, 2635
- Nicholson, Judge**, suggested the tune of The Star-Spangled Banner, 2966
- Nickel**, in Canada, 5600  
 on pins, 288
- Nicotine**, its effect on the body, 3318
- Nichans, Charles H.**, sculpture of,
- Niger River**, in Africa, 4254
- Night**, meaning of night and day, and picture, 78  
 what would happen if it were always night, 79  
 why it is dark at night, 622
- Night heron**, 1954; picture, 1950
- Nightingale, Florence**, her life, 561  
 pictures, 561, 562  
 went to the Crimea, 1098, 3632
- Nightingale**, how a nightingale helped a knight to escape, story, 2745  
 its life-story, 2032, 2328  
 pictures in colour, 1744, 2053  
 the emperor's nightingale, story, with pictures, 3203
- Nightjar**, 1748; pictures, 1736, 1744
- Nightmare**, what it is, 2671
- Nightshade**, deadly, 4616; with picture, 4612  
 woody, 4289; with picture, 4286
- Nijni-Novgorod**, fairs, 3750; picture, 3744
- Nikko**, a beautiful town, 370
- Nile**, battle of the, 2274, 4360  
 river in Egypt, 279, 4254, 4260  
 the damming of the, with pictures, 5400
- Ninebark**, picture, 4837
- Nine holes**, game, 1614
- Ninety-nine**, how to multiply by, 579
- Ninety-three**, extract from book, 5593
- Nineveh**, Ashur-bani-pal's library, 4980  
 built by Babylonians, 4976  
 discoveries at, 4977  
 its destruction, 4982  
 taken by the Medes, 5067
- Nippon**, largest island of Japan, 370
- Nirvana**, believed in by Buddhists, 2996
- Nithsdale, Earl of**, how he escaped from the Tower of London, and picture, 2293
- Nitrate of silver**, found in Chile, 4572
- Nitrates**, help to grow wheat, 1798  
 supplied to plants by microbes, 3340
- Nitre**, gives off its oxygen easily, 2228
- Nitric acid**, 1798, 1801
- Nitrogen**, amount in the air, 939  
 an element in the air, 903, 938  
 chief gas in the air, 1130  
 contained in some acids, 1797  
 dissolved in the blood, 1443  
 forms compound with oxygen, 1666  
 necessary to life, 3339  
 what kind of element it is, 1196
- Nitrous acid**, what it is, 1798
- Noble men**, a band of, story, 4010
- Nodes**, what they are, 4917
- Noise**, cannot be heard without air, 3976  
 influence on the brain, 4759  
 loud noises make us deaf, 2458  
 music and noise, 4757  
 noise from stick swung in the air, 4827  
 noise when a bag bursts, 3096  
 noise will break a window, 911  
 what a noise is, 509  
 what makes noise, 3976  
 why we are afraid of loud noises, 2674
- None-so-pretty**, London pride, picture, 4838
- Norfolk Island**, off Australia, 1466
- Norman buildings**, have round arches, 592
- Normandy**, an interesting place, 2399  
 conquered by Philip Augustus, 2067  
 fisher-woman, picture, 2395  
 founded by Rollo, 3592  
 in France, 434  
 named after the Northmen, 2066
- Normans**, erected many buildings, 591  
 ruled in England, 436  
 settled in South Italy, 3014
- Normenmen**, the, 267
- North, Lord**, 992
- Northallerton**, battle of, 3079, 3080
- North Cape**, discovery by Ohthere, 4720  
 in the island of Mageroe, 3601
- North Carolina**, a slave state, 2010  
 secedes, 2012, 3536
- North Dakota**, admitted, 3537
- Northern Crown**: see *Corona borealis*
- North Magnetic Pole**, 4438, 5254
- Northmen**, invaded France, 2065  
 invaded Scotland, 434  
 settled in Normandy, 434
- North Pole**, how Peary found it, 5211  
 its position, 411  
 movement of earth at, 5167  
 pictures, 4729
- North Sea**, 194, 2750
- North Sea Canal**, 3464
- Northumberland, Duke of**, 2534
- Northumberland**, meaning of name, 5388
- Northumbria**, ancient kingdom, 428
- Northwest Company**, founded, 5148
- Northwest Mounted Police**, the Royal, history and work, with pictures, 4577
- Northwest Passage**, the, 262, 266  
 search for, 1246, 4724
- North-west Territories**, purchased, 1248
- Northwest Territory**, 1822  
 included in the Dominion, 4106  
 transferred to Canada, 4104
- Norton, Hon. Mrs.**: see *Poetry Index*
- Norway**, flag, picture in colour, 1640  
 has sunshine all night, 3600  
 history and geography, 3591  
 its separation from Sweden, 3598  
 pictures, 3597  
 relief map, 3602  
 towns and firds, 3601
- Norway, Maid of**, queen of Scots, 118
- Nose**, affected by smell, 4627  
 filters the air we breathe, 1634, 1789  
 how to stop the nose bleeding, 3397  
 picture, 4627
- Notebook**, how to make, and picture, 2871
- Notre Dame**, cathedral, 2064, 2318  
 history, with pictures, 5332
- Nottingham**, meaning of name, 5388
- Nottingham Castle**, the heroine of Nottingham Castle, story, and picture, 3471
- Nought**, how to make it, 3512
- Noughts and crosses**, game, and picture, 5113
- Noureddin**, and the wonderful Persian, story, and pictures, 2739, 2741
- Nova Scotia**, description, 5601  
 minerals in, 5599

# INDEX

**Nova Scotia**, progress, 3900  
 province of Canada, 1244, 1247  
 settled by Great Britain, 3621  
**Nova Scotia, Order of Baronets**, established, 3621  
**Novaya Zemlya**, explored, 4724  
**November**, how it got its name, 4521, 4533  
 shooting stars in, 152  
 symbolic of November, picture, 4520  
**Novgorod**, desolated by famine, 3624  
 liberties crushed by Ivan III., 3626  
 member of Hanseatic League, 3624  
 town of Russia, 3624, 3750  
**Noyon**, brave French maid of, story, 2630  
**Nuggets**, of gold, 5298  
**Numbers**, cards that tell any number thought of, 5680  
**Nunnulites**, form stone, 2336  
**Nun pigeon**, has a hood, 2215  
**Nürnberg**, toys made, 2765  
**Nussbach**, in Black Forest, picture, 2751  
**Nut**, various kinds, with pictures, 1965  
**Nuthatch**, bird, 2218; picture, 2217  
**Nuzio, Allegretto de**, 4948  
**Nyassa, Lake**, drained by Shiré River, 4254  
**Nymph**, story of a water nymph, 5518

O

**Oak**, and the reed, fable, with picture, 5205  
 Californian live-oak, 5440  
 description of the white, 5446  
 grows from the acorn, 63  
 hard wood, 1617, 4998  
 important product of the United States, 2422  
 live-oak, picture, 5623  
 picture, 3179  
 pin-oak, 5626  
 struggle for life, 3834  
 what kind of tree it is, 3179  
**Oak-apple**, 2460; picture, 3895  
**Oak-wood**, how it is carpeted, 3951  
**Oars**, first use by men, 73  
**Oases**, fertile spots in a desert, 3073  
**Oat cakes**, made from oatmeal, 1144  
**Oat grasses**, pictures, 1335, 2976, 2977  
**Oatmeal**, value as food, 2926  
**Oats**, value as food, 2926; picture, 2923  
**Old River**, over 2,000 miles long, 3752  
**Object game**, how to play it, 2573  
**Object lesson**, in French, 6111  
**Oboe**, a reed instrument, 2051  
**Obsidian**, kind of lava, 3229  
**Obstacle race**, how to arrange it, 3614  
**Ocean**, full of life, 360  
 great masses of water, 3004  
 how the cold water sinks, 4182  
 where the water came from, 3429  
**Oceania**, islands off Australia, 1486  
 types of the people, picture, 1463  
**Ocelli**, what they are, 2797  
**October**, how it got its name, 4521, 4533  
 symbolic of October, picture, 4520  
**Octopus**, sea-animal, and picture, 2450  
**Ode**, what it is, 343  
**Odense**, ancient city of Denmark, 1468  
**Odér River**, in Germany, 2752  
**Odessa**, bombarded by the allies, 3632  
 foundation, 3631  
 port of Russia, 3750  
**Odin**: see Woden  
**Odysseus**: see Ulysses  
**Odyssey**, relates Grecian history, 5122  
 the story, 68  
**Edipus**, the story of his life, 2738  
**Oersted, Hans Christian**, portrait, 4313  
 the magnet and electricity, discovery, 2119, 4314  
**Ofero**, became St. Christopher, 1008  
**Ogilvie, Will H.**: see Poetry Index  
**Oglethorpe, James**, 524  
**Ohio**, admitted, 3534  
 settlement and naming of, 1822  
**Ohio Company**, 882  
**Ohthere**, his Arctic expedition, 4720  
**Oil**, conveyance from Baku, 3753  
 difference between fat and oil, 2802  
 exists after being burnt, 5023  
 got from the hazel nut, 1965  
 how it calms water, 2506, 5020  
 viscous liquid, 2505, 5020

**Oil**, what fixed oils are, 2802  
 where it comes from, 3238  
 why it burns so easily, 3378, 5022  
 why it floats on water, 3865  
 why it makes a wheel go round more easily, 4601  
 why it will not mix with water, 37  
 why water goes into beads when put on an oily plate, 2506  
**Oilstone**, for sharpening tools, 339  
**Oil-wells**, 4131; with pictures, 4133, 5568  
**O'Keefe, Adelaide**: see Poetry Index  
**Oklahoma**, territory opened, 3537  
**Olaf**, crown prince of Norway, 3598  
**Olaf**, king of Norway, 3594, 3602  
**Old Castle**, province of Spain, 3353  
**Old Curiosity Shop**, *The*, story of the novel, and pictures, 2757  
**Olden, Lake**, in Norway, and picture, 3599  
**Old Ironsides**, nickname of the frigate Constitution, 2902  
**Old maid**, game, 4886  
**Old man** and his sons, fable, 3062  
**Old Mortality**, story of the novel, with picture, 1760  
**Olga**, queen of Russia, 3624  
**Oliphant, Mrs.**, life, 2599; portrait, 2593  
**Olive oil**, used instead of butter, 1144  
**Oliver Twist**, the story of the novel, and pictures, 2551  
**Olympic games**, held at Olympia, 5128  
 held by the Greeks, 1803  
 pictures, 5123  
**Oman**, flag, picture in colour, 1640  
**Omar**, second caliph, 3876  
 troops conquered Egypt, 4256  
**Omdurman**, battle of, 4260  
**Omsk**, agricultural centre, 3752  
**Onions**, how to grow onions, 2971, 3922  
 must be hand-weeded, 3278  
 why they make eyes water, 1989  
**Ontario**, has splendid farms, 1244  
 minerals in, 5599  
 province of created, 4102  
 rich province of Canada, 1240  
**Ontario, Lake**, 1240  
**Oolite**, what it is like, 5197  
**Oozes**, deposits in the oceans, 2620  
**Opal mine**, 2860  
**Opaque**, what it means, 1266  
**Ophion ichneumon**, picture, 3257  
**Opie, Mrs. Amelia**: see Poetry Index  
**Opium**, smoked in China, 114  
**Operto**, famous for wine, 3361; picture, 3357  
 foreign trade, 3353  
**Opossum**, life-story, 864; pictures, 51, 863  
**Opossum monae**, 768  
 care of young, 5480  
**Optical illusions**, 104  
**Optical lantern**, magic lantern, 2767  
**Orache**, picture, 5187  
**Orange**, curious ways of peeling, 5662  
 how it grows, picture in colour, 643  
 orange grove, picture, 2419  
 where it grows, 641  
 why it does not grow in England, 3384  
**Orange**, colour, how to make, 1935, 4508  
**Orange Free State**, 1769, 1770  
**Orange River Colony**, 1768  
**Oranges and lemons**, game, 4144, 5196  
**Orange-tip butterfly**, picture in colour, face 2983  
**Orang-outan**, effort to communicate thoughts, 5323  
 help in the study of human disease, 3077  
 its life-story, 604  
 pictures, 51, 603  
**Orb**, origin of, 5650  
**Orchestra**, its sound waves, 4758  
**Orobida**, with pictures, 4423  
**Orobis**, bee, 4423; picture, 4423  
 bird's nest, 4423; picture, 4421  
 butterfly, 4423; pictures, 4421, 4423  
 dwarf, 4423  
 fly, 4423; picture, 4422  
 frog, 4423  
 green-man, 4423  
 green-winged, 4423; picture, 4422  
 purple, 4423  
 spotted, 4423; picture, 4421  
**Oregon**, admitted, 1836, 3536



# INDEX

- Oregon**, discovery of, 1396  
settled and ownership questioned, 1830  
question concerning ownership, 3535  
**O'Reilly, John Boyle**: see Poetry Index  
**Orellana, Francisco**, explorer, 4506  
**Ore Mountains**, in Germany, 2752  
**Orenburg**, on Ural river, 3753  
**Orestes**, hero of a story, 5312  
**Organ**, how the sound is made, 3096  
**Organic chemistry**: see Chemistry  
**Orient Express**, 3224  
**Oriental hyacinth**, 5272  
**Origin of Species**, by Darwin, 2882  
**Orinoco River**, 4498, 4574  
explored by Raleigh, 5396, 5396  
**Oriole**, like a friar-bird, 3415  
**Orion**, constellation, 1948, 2614, 2896  
legend of Orion, 3313  
pictures, 1949, 2617  
**Orleans**, town of France, 2399  
**Ormuz**, city that Marco Polo visited, 55  
Portuguese driven from Ormuz, 2880  
**Ormuzd**, god of the Zoroastrians, 3000, 5058  
**Orodes**, Parthian king, 5065  
**Orpine**, a sedum, 5271  
**Orthoptera**, order of insects, 3141  
**Ortolan**, eaten as a dainty, 2067  
**Osborne Naval College**, 3232  
**O'Shaughnessy, Arthur**: see Poetry Index  
**Oysters**, used to make baskets, 396  
**Oslo**, old town of Norway, 3602  
**Osman**, leader of the Ottoman Turks, 3878  
**Osprey**, bird, 1843; picture, 1838  
**Ostrich**, bird that cannot fly, 48  
ostrich farms in Africa, 1766  
pictures, 51, 1429  
what kind of bird it is, 1426  
**Oswego**, captured, 3622  
**Otago**, province of New Zealand, 1464  
**Othello**, story of play, and picture, 473  
**Othman**, third caliph, 3876  
**Otho**, overthrew Galba, 531  
**Otis, Elisha G.**, as inventor, 2670  
**Ottawa**, capital of Canada, 1242  
chosen as Canada's capital, 4100  
**Otter**, catches fish, 140  
dwelling, 5414  
education of, 5480  
how it is hunted, and picture, 2729  
**Otumba**, battle of, and picture, 4385  
**Oudenarde**, battle of, 2530  
**Our Mutual Friend**, story of novel, 2436  
**Outlines**, game, and picture, 5113  
**Outram**, relieved Lucknow, 1706  
**Oval ring taw**, game, 5106  
**Overhand knot**, 235  
**Overstrung**, in piano, 4914  
**Overtones**, in sound, 2620, 4864, 4913  
**Ovolo moulding**, what it means, 1346  
**Owen, Robert**, work as a reformer, 3702  
**Owen, Sir Richard**, English naturalist, his life,  
854; portrait, 851  
with skeleton of dinornis, picture, 855  
**Owl**, pictures, 51, 1847  
what kind of bird it is, 1848  
why it comes out only at night, 1867  
**Owl moth**, 2992  
**Owl parrot**, 1430; picture, 1431  
**Ox-bot**, insect, 3262; picture, 3257  
**Ox-eye daisy**, 4112  
**Oxford**, meaning of name, 5398  
**Oxidation**, what it is, 1293, 3236  
**Oxide of calcium**, what it is, 4339  
**Oxide of iron**, what it is, 1776  
**Oxide of lead**, its use, 2129  
**Oxide of potassium**, effect of water, 1800  
**Oxide of sodium**, effect of water, 1800  
**Oxide of sulphur**, how it is made up, 1290  
**Oxley, Lieutenant**, explored Australia, 356  
**Oxus River**, 3938  
**Oxygen**, an element, 938  
contained in most acids, 1798  
forms compounds with nitrogen, 1666  
given out by plants, 2077, 4748  
helps to make us warm, 546  
how it gets to the bottom of the sea, 362  
in the air, 285, 1130  
in water, 1040, 1797, 1868  
its specific gravity, 8816  
most important gas in the blood, 1443  
not necessary in the sun, 3431  
**Oxygen**, oxidation of fruit, 5641  
pure oxygen does not kill us, 4117  
taken in by rocks, 4546  
what kind of element oxygen is, 1195  
**Oxyhemoglobin**, what it is, 1385  
**Oyster**, attaches itself to rock, 2588  
how an oyster makes a pearl, 171  
how oysters are cultivated and gathered, with  
pictures, 3771, 3773, 3774  
lawyer and the oyster, story, 4938  
not a fish, 661  
pearl in the oyster, picture, 172  
pictures, 51, 2589  
supply of oysters in U. S., 2658  
**Oyster-catcher**, a bird, 1968, 2590  
picture, 1959  
**Ozone**, variety of oxygen, 1859

## P

- Pacific Ocean**, discovered, 258, 266  
how it was discovered, 60  
is the deepest ocean, 1466  
**Pagan**, names derived from pagan, 4752  
**Page, C. G.**, and the electro-magnet, 4317  
**Pagodas**, are temples, 1880  
**Pain**, animals' feelings, 4598  
avoidance by numbing nerves, 4343  
**Pain**, special nerves of pain sense, 1964  
what we know about it, 3092  
**Paint**, how to clean, 4456  
**Paint brushes**, how to clean, 4456  
**Painted Desert**, The, pictures, 3589  
**Painted lady**, butterfly, 2992  
picture in colour, face 2982  
**Painters**, twelve great painters, 757  
**Painting**, a green leaf, and its shadow, picture,  
3496  
animal drawing with the brush, 4095  
colours, and how to use them, 2654, 3496  
drawing and painting a daisy, 2894  
how to paint, 253, 3497  
how to put on a graduated wash, with picture,  
3292  
open book painted on a green background, pic-  
ture, 3497  
spray of leaves, 1453  
**Pakenham, Sir Edward**, 1400  
**Paleomastodon**, skull, picture, 3679  
**Paleontology**, what it is, 852  
**Palafox, José**, defended Saragossa, 4645  
**Palamides, Sir**, overcome by Tristram, 3212  
**Palatine Hill**, founded by Romulus, 5260  
**Pale**, in the flower of grass, 1332  
**Palestine**, conquered by Saladin, 1589  
now largely a desert, 3073  
pilgrimages to, 1585, 3874  
**Palestrina, Giovanni Pierluigi da**, wrote a  
mass, 3243; with portrait, 3243  
**Palestro**, battle of, with picture, 3021  
**Pallasy, Bernard**, life, 4568; picture, 4559  
**Palladio, Andrea**, his life, 1254  
**Palm**, Californian fan-palm, 5440  
Washington fan-palm, picture, 5441  
**Palmer**, British midshipman, how he saved his  
companions, story, 4178  
**Palmer, Erasmus**, sculpture of, 4842  
**Palmer, John**, started mail coaches, 4380  
**Palmerston, Henry John**, Viscount, a Liberal  
prime minister, 2386  
pictures, 2379, 2383  
**Palmetto**, history of, 5440  
the cabbage palmetto, picture, 5441  
**Palmetto State**, why South Carolina is called  
the, 5440  
**Palo Alto**, battle of, 1832  
**Pamir Plateau**, in Central Asia, 3931  
**Pampas**, plains of South America, 3075, 4500  
**Pampas grass**, 4500  
**Pan**, a Greek god, 4532  
**Panama**, flag, picture in colour, face 1640  
may be cleaned by the U. S., 2190  
republic, 4392  
**Panama, Isthmus of**, exploration, 258, 266  
where it is, 4381  
**Panama Canal**, digging the, with pictures, 5631  
its construction, 4392, 4576  
pictures, 4387, 4389  
United States authority over, with pictures,  
2190

# INDEX

- Pancreas**, how it digests fats, 2346  
**Panda**, a Zulu king, 1769  
**Pandora's Box**, story of, 5078  
**Panel**, in carpentry, 1510  
   in sculpture, 4159  
**Pangolin**, animal, 1002; picture, 1001  
**Panorama**, how to make a moving panorama show, 5663  
**Pansy**, how to plant, 572  
   its cultivation, 5271  
   likes moisture, 1074  
   pictures, 573  
   story about the pansy, 190  
   when to sow seed, 1287  
   wild pansy: see Heartsease  
**Paoli, Pasquale de**, picture, 213  
**Papal States**, governed by the popes, 3014  
**Paper**, how it is made, with pictures, 888  
**Paper**, discovery of process of making rags into, 2527  
   how it is made, with pictures, 888  
   how to boil water in, with picture, 581  
   how to make a box, with picture, 234  
   how to make a long chain from a piece of paper, with picture, 98, 3518  
   how to make dolls, with picture, 341  
   how to make paper flowers, 4140  
   production of in U. S., 2664  
   things to make with folded paper, with pictures, 4776  
   through the microscope, picture, 2325  
   what it is made from, 745  
   what to do with a piece of paper, 1925  
   what to use for drawing, 252  
   why heat makes it curl up, 3979  
**Papin, Denis**, and steam navigation, 2468  
**Papineau, Louis**, a political leader, 3901  
**Papuan bower bird**, 1745  
**Papyrus**, Egyptian papyrus deciphered, 4782  
   how Egyptians wrote on it, picture, 5099  
   papyrus plant, picture, 5099  
   the earliest writings, 3399  
   used by the Egyptians as paper, 5099  
**Para**, a port of Brazil, 4506, 4567  
**Parable**, what the word means, 4604  
**Parachute**, how to make of paper, with picture, 1925  
**Paradise-fish**, with picture, 2683, 2684  
**Paraffin**, how it is obtained, 2363  
   what it is, 4114  
**Paraguay**, a state of South America, 4502, 4572;  
   flag, picture in colour, 1640  
**Paraguay River**, 4568  
**Parakeet**, an Australian bird, 1747  
**Paraldehyde**, makes people sleep, 1873  
**Parallels of latitude**, how they are drawn, with picture, 1750, 1751  
**Parana River**, flows into river Plate, 4568  
**Parasite**, lives on other animals, 3145, 3830  
**Parasitic plants**, 3830  
**Parochment**, how it got its name, 4532  
   was used for writing on, 3399  
**Pardoner's Tale** in *The Canterbury Tales*, 440  
**Paré, Ambroise**, his life, 4198  
**Parélie, Jeanne**, the devoted daughter, 321  
**Parental instinct**, 5133  
**Parime Mountains**, 4574  
**Paris**, stole Helen of Troy, 67, 1683  
**Paris**, a first holiday in, with pictures, 5331  
   Arc de Triomphe, picture, 5012  
   description of the city, 2393  
   general view of the city, picture, 2393  
   girl who saved Paris, story, 2317  
   Marseilles men march to Paris, 2272  
   Opera House, picture, 2393  
   Place de la Concorde, picture, 2391  
   Vendôme Column and Arc de Triomphe, 5005  
   was besieged by the Germans, 2277, 2580  
**Park, Mungo**, explorer, 282; portrait, 283  
**Park, Richard Hamilton**, sculpture of, with picture, 4849  
**Parker, Samuel**, bishop, 4557  
**Parker, Sir Gilbert**, life-work, 4472; picture, 4471  
**Parker, Theodore**, as anti-slavery leader, 2009  
**Parks**, Stanley Park, picture, 5610  
**Yellowstone National Park**, 587  
**Parliament**, British, founded, 600  
   its power established, 1029  
   more people could vote, 1100  
   scenes in, picture, 2383  
   sent message to Turkish Parliament, 3228  
**Parliament**, Simon de Montfort founded the, 2067  
   union of Irish and British, 1096  
   union of the English and Scottish parliaments, 1029, 2540  
   what the word means, 3780, 4604  
**Parliament, Houses of**, how they were built, 1164; picture, 1165  
**Parthianus**, a Greek painter, 4585  
**Parrot**, different kinds, pictures, 1743  
   different species, 1747  
   does not know what it is talking about, 3234  
   how long it lives, 2328  
   meeting of parrots, picture, 1739  
   the cat and the parrot, story, 2494  
   why it can talk, 1268  
**Parrot-wrasse**, fish, 210; picture, 209  
**Perry, Sir William**, an explorer, 4724  
   portrait, 4725  
**Parsees**, who they are, 3878  
**Parsley**, family of, 4112  
   how to grow, 3176  
**Parasip**, its family, 4112  
**Parsons, Mon. Charles A.**, made the steam-turbine, 2474; portrait, 2467  
**Parthenon**, Greek temple, 620, 3220  
   how to make with reels, and picture, 4352  
   its building and sculptures, 5128  
   pictures, 4164, 5125  
**Parthians**, ruled Persia, 5065  
**Parthian**, war with the Romans, 5065  
**Partridge, William Ordway**, sculpture of, 4848  
**Partridge**, description, 151  
   how it protects its young, 1518  
   how long it lives, 2328; picture, 1517  
   reared by hand, 1513  
**Party**, entertainment for, and pictures, 5103  
   how to give a Children's Encyclopedia party, 4248  
**Pascal, Blaise**, discovered the law of equality of fluid pressure, 3948  
   experiment with atmospheric pressure, 3944  
**Passau**, a town in Austria, 2856  
**Passes**, of Canadian Rockies, 5607  
**Pastion Flower**, its history, 5118  
**Paste**, how to make paste for sticking cards, 2871  
**Pasteur, Louis**, found everything wonderful, 940  
   his life, 4202; picture, 4199  
   studied microbes, 781, 907  
**Pastures**, what they are, 1929  
**Patagonia**, people, picture, 4503  
   plateau land, 4569  
**Patching**, how to patch, with picture, 3515  
**Pathans**, in India, 1550, 1700  
**"Pathfinder of the Rockies"**, 1830  
**Paton, John G.**, life, 3490; picture, 3487  
**Patricians**, Roman nobles, 414  
   ruled Rome, 5261  
**Patrick, St.**, an Irish saint, 1213  
   story of the flag of St. Patrick, 2333  
**Patroclus**, the friend of Achilles, 68  
**Patterns**, how to make and paint them, with picture, 2174  
   simple patterns with flowers, 3374  
**Patteson, John**, life, 3489; portrait, 3483  
**Paul**, emperor of Russia, his reign, 3631  
**Paul II.**, pope, 4948  
**Paul VI.**, pope, 4951  
**Paul, Vincent de**, see Vincent de Paul  
**Paul, St.**, places he may have visited, 2330  
   shipwrecked on Malta, 1875  
**Pavia**, town in Italy, 3016  
**Payne, John Howard**, author of *Home, Sweet Home*, life, 2953  
   see Poem: Poetry Index  
**Paynim**, crusade against, 1587  
**Paysandu tongue**, 4568  
**Pas, Doña**, heroine of Mexican legend, 5231  
**Pea**, everlasting, 4424  
   family of plants, 4111  
   how to grow, 2371, 3278, 3514  
   how to pick, 1509  
   pictures, 4419, 4420  
   sweet, description of, 5269  
   the bag of peas, 5654  
**Peabody, George**, helped the poor, 1100  
**Peace**, heroes of, 3105  
**Peach**, peaches growing, picture in colour, 650  
   where it comes from, 642

# INDEX

- Peacock, Thomas Love:** see Poetry Index  
**Peacock,** and the crane, fable, with picture, 5205  
 has a disagreeable cry, 1746  
 how long it lives, 2328  
 knows when rain is coming, 155  
 picture, 1741  
 the peacock and Juno, fable, 4008  
**Peacock, the,** sloop of war, and Hornet, 1398, 2902  
**Peacock butterfly,** 2992  
 pictures, face 2983 in colour, 3893  
**Peacock throne,** picture, 3882  
 was in Delhi, 1548  
**Pea crab,** 2584  
**Peale, Charles Willson,** life and work, 4148  
**Pea-nut,** 1966  
**Pear,** how the fruit is made up, 4110  
 shaped into a goat, 5668  
 the wild pear-tree, with picture, 3444  
 when to gather, 4354; with picture, 651  
 where our pears come from, 641  
**Pearl,** how an oyster makes pearls, 171  
 how it is found, with pictures, 173  
 made by mussels, 2588  
 pearl necklace, picture, 171  
 where best pearl-oysters are found, 171  
**Pearl Mosque,** a building in Agra, 1550  
**Pe arson, Capt.,** commander of the Serapis, 2886  
**Peary, Robert E.,** Greenland expeditions, 4724  
 history of the North Pole, 5211  
 pictures, 4725, 4728  
 reached the North Pole, 4726  
**Peary Arctic Club,** formed, 5211  
**Peasant,** and the three robbers, 5424  
 at the flood, story, with picture, 4009  
**Peasants' War,** in Germany, 2527  
**Pease, Edward,** built railway, 614  
**Peat,** what it is, 799, 3542  
**Pecan, nuts,** 1965  
**Pecary,** wild pig, and picture, 383  
**Pediment,** a term in architecture, 1505  
**Pedro,** king of Castile, was dethroned, 2906  
**Fee ku,** game, 3920  
**Peel, Captain William,** how he saved a battery, with picture, 3789  
**Peel, John,** life of hero of song, with pictures, 5493  
**Peel, Sir Robert,** abolished Corn Laws, 2386  
 pleading for the poor, picture, 2385  
 police nicknames derived from his name, 5382  
 portrait, 2379  
**"Peelers,"** nickname of London Police, 5382  
**Pegasus,** winged horse, 1050, 3313  
**Pelho River,** in China, 114  
**Pekin,** besieged by the Boxers, 114, 368  
 is made up of two cities, 114  
 made the capital of China, 112  
 marble bridge, picture, 30  
 Temple of Heaven, picture, 2997  
 views in pictures, 113  
**Pelagius,** a pope of Rome, 4708  
**Pelargonium:** see Geranium  
**Pe-le,** supposed to be a goddess, 2491  
**Pelée, Mont,** eruption of, 1878  
**Pelham, Peter,** who trained Copley, 4147  
**Pellias,** a usurper, 185  
 king of Ioclos, 185  
**Pelican,** bird, 1952, 2328; picture, 1950  
**Peling mountains,** in north China, 106  
**Pelopidas,** saved Greece, 1304  
**Peloponnesus,** south of Greece, 1302, 5121  
**Pelvis,** a part of the human body, 2546  
**Pembroke,** what the name means, 5388  
**Pen,** different kinds of pens, 3399  
 how pens are made, pictures, 3401  
 why a pen and ink writes better on paper than on a slate, 1641  
**Pen-and-ink drawing,** how to do, with picture, 4302  
**Pencil,** how a lead pencil writes, 3979  
 how pencils are made, pictures, 3403  
 how to hold when writing, picture, 247  
 mark, through microscope, picture, 2325  
 when first used, 3400  
 why a slate pencil writes on slate but not on paper, 1641  
**Pendennis,** the story of the novel, with picture, 3473  
**Pendulum,** illustrates kinetic and potential energy, 3552  
 its swing a true vibration, 3469  
**Pendulum,** why it swings to and fro, 3549  
 why it will not swing for ever, 3544  
**Penelope,** her tapestry, story, 962  
 the wife of Ulysses, 68  
**Penguin,** how the sheath-bill robs it, 1626  
 is killed for its oil, 1632  
 pictures, 51, 1431  
 what kind of bird it is, 1430  
**Peninsular War,** 4362  
**Penn, William,** 521  
 portrait, 519  
**Pennines,** length, 4497  
 seize moisture of west winds, 3352  
**Pennsylvania,** colony of, with picture, 517  
 founding of, 521  
**Penny,** disappearing penny trick, with picture, 2355  
 electric penny trick, with picture, 4455  
 how it is made, 536  
 how to pick marked penny from hat, 5112  
 how to make it rise in water, with picture, 580  
 how to move without touching, 5453  
 meaning of words round it, 3380  
 mysterious disappearing penny trick, with picture, 4778  
 suspended penny trick, with picture, 4666  
 three pennies make fourpence, trick, 5112  
**Penny post,** its introduction, 1099  
**Pennywort,** marsh, 5038, with picture, 5035  
**Pennywort,** wall: see Wall pennywort  
**Peony,** description, 5271  
 its cultivation, 5271  
**People,** can we think about people without seeing them in our mind? 5486  
**Pepin,** gave Lombards' land to pope, 2524  
**Pepperell, William,** in command of Louisburg expedition, 5622  
**Peppermint,** a herb, 3176; picture, 3831  
**Peppermint,** creams, how to make, 3512  
**Pepsin,** a ferment that digests food, 2344  
**Pera,** quarter of Constantinople, 3226  
**Per cent.,** what the term means, 1169  
**Percept,** meaning of word, 4839  
**Perch,** fish, with pictures, 2683  
**Perchival, Sir,** search for Holy Grail, 871  
**Peregrine falcon,** 1846; picture, 1845  
**Perennial candytuft,** 1074  
**Perennial plants,** what they are, 719, 1816  
 when to buy, 1817  
**Perennial rye grass,** picture, 1340  
**Perfume,** how to make from flowers, 1501  
**Pericles,** helped with Acropolis buildings, 5128  
 how he ruled Athens, 1302  
**Perim,** a coaling station, 1876  
**Periscope,** description, 5686  
 pictures, 5591, 5592  
**Periwinkle,** fish, 2590, 4454; picture, 2589  
**Periwinkle,** plant, picture, 572  
**Perkin, Sir William,** discovered dyes, 2507  
**Pero,** the magic boy fiddler of Sicily, story, with picture, 557  
**Peroxide of hydrogen,** its formula, 1670  
**Perpetual motion,** what it is, 3550  
**Perrault, Charles,** wrote fairy tales, 1487  
**Perronet, Edward,** wrote a hymn, 2000  
**Perrot, Nicholas,** visited the site of Chicago, 5513  
**Perry, Commodore,** portrait bust of, 4844  
 traded with Japan, 346  
**Perry, James,** made metal pens, 3400  
**Perry, Oliver Hazard,** on Lake Erie, 1399, 2902, 4279  
**Perry,** made from pears, 641  
**Perryville,** battle of, 2016  
**Persepolis,** pictures, 5063  
 ruins found, 5060  
 taken by Alexander the Great, 5061, 5065  
**Perseus,** his adventures, with picture, 1049  
 saved Andromeda, 3314  
**Perseus,** constellation, 2612; pictures, 2615, 2617  
**Persia and Persians,** a Journey to Ispahan, 3881  
 attacked Georgia, 3631  
 conquered the Punjab, 1700  
 decline of power, 5064  
 defeated by Heracilius, 3152  
 destruction of Acropolis, 5128  
 extension of empire by Darius, 5060  
 fought with the Turks, 3158  
 history, 3873, 5067  
 power in Egypt, 4256, 4790, 5060, 5084, 5065  
 religion, 5068

# INDEX

**Persia and Persians**, revival of power, 5066  
the Bible of Persia, 5066  
the rise and fall of Persia, 5067  
the unhappy king of Persia, story and picture, 816  
took Babylon, 4984, 5058  
took Phoenicia, 5124  
union with Media, 5058  
war with Russia, 3632  
wars with Greeks, 1302, 1306, 3876, 5060, 5129  
wars with Mesopotamia, 4974  
**Pictures of Persia and Persians**  
defeat by Greeks at Issus, 5069  
flag, in colour, face 1640  
king receiving tribute, 5063  
king's bodyguard, 5057  
Persia, Asiatic Turkey, and Arabia, 3875  
Persian on a donkey, 3873  
Persians clamouring for parliament, 3879  
rebels and Shah's representatives, 3882  
tombs in the desert, 3877  
types, 3879  
**Perspective**, pictures with wrong perspective, 4881  
what it is, 1578  
**Perspiration**: see Sweat  
**Perth**, capital of Western Australia, 1362  
**Pern**, account of the country, 4576  
added to Spain's dominions, 3356  
animals, 4571  
became independent, 3360, 4506  
flag, picture in colour, face 1640  
Inca kingdom destroyed by Spain, 4504  
where it is, 4500  
**Pestalozzi, John**, his work for children, 2968, 4177; picture, 4177  
**Petals of flower**, picture, 3736  
**Petard**, hoist with his own, 5534  
**Peter the Great**, of Russia, his life, 3628  
interest in Archangel, 3753  
memorials in St. Petersburg, 3746, 3748  
scenes from life, pictures, 3627  
**Peter III.**, of Russia, 3630  
**Peter of Moron**, a hermit who became pope, and picture, 459  
**Peter, St.**, may have visited Rome, 2330  
**Peter the Hermit**, 1493, 1586  
**Peter**, names from Peter, 4752  
robbing Peter to pay Paul, 5534  
**Peter Martyr**, what he said of Isabella of Castile, 2367  
**Peter Pan**, story of, and pictures, 2843  
written by J. M. Barrie, 1474  
**Petersburg**, siege of, 2020  
**Peter Simple**, the story of the book, 2028  
**Petition of Right**, signed, 1887, 1892  
**Petrarch**, an Italian poet, 3328  
life, 5219; portrait, 5217  
**Petrel**, different kinds, 1626; pictures, 1627  
**Petrifying**, of wood, 5250  
petrified forest, picture, 3072  
**Petrol**, contains hydrogen, 1167  
is burned in motors, 1771  
its specific gravity, 3816  
means rock oil, 3238  
**Petroleum**, and by products, 4131-4134  
in Canada, 5600  
production of, in U. S., 2661  
**Petrus bone**, is part of the skull, 2542  
**Pettie, John**, his pictures, 1323, 1499  
**Pettigrew, J. J.**, with Pickett's charge; death, 2016  
**Pewter**, formed of tin and lead, 1870  
**Phagocytes**, what they are, and picture, 785  
**Phalanger**, flying: see Flying phalanger  
**Pharaoh**, a title of the rulers of Egypt, 4787  
on his way to temple of Ammon, picture, 4781  
**Pharaoh's chicken**, the vulture, 1844  
**Pharsalia**, battle of, 420, 5266  
**Pheasant**, how long it lives, 2328  
its life-story, 1514  
pictures, 51, 1516  
the different kinds of pheasants, 1515  
**Pheasant's-eye narcissus**, 5272  
**Phedippides**, how he ran from Marathon to Athens, with picture, 1803  
**Phelps, Elizabeth Stuart**, life, 2048  
**Phidias**, a great sculptor, 620, 1302  
decorated the Parthenon, 4160  
helped with Acropolis buildings, 5128  
made the statue of Athena, 5125

**Phifer, Lyndon**, rescued child, 3107  
**Phigaleia**, frieze, picture, 4159  
**Philadelphia**, 521, 788  
as art centre, 4148  
World's Fair in, 3537  
**Philadelphia, the**, war-ship, destroyed at Tripoli, 2900  
**Phileas**, Island of, its temples, 4792  
submerged in reservoir, 5408  
**Philatelist**, stamp-collector, 5289  
**Philip**, duke of Burgundy, 3460  
**Philip**, king of Macedon, 1304, 5130  
stories concerning, 5312, 5313  
**Philip I.**, king of Spain, 2527  
**Philip II.**, king of Spain, built the Escorial, 5499  
his reign, 3356  
husband of Mary I. of England, 845, 2534  
made himself king of Portugal, 1702  
pictures, 3351, 3361  
ruled over the Netherlands, 124, 5171  
seized Brazil, 4606  
sent the Armada against England, 2535  
treated the Netherlands cruelly, 3460  
wished to marry Queen Elizabeth, 848  
**Philip**, prince of Orleans, 4060  
**Philip**, names derived from, 4752  
**Philip Augustus**, king of France, conquered Normandy, 2067  
had to obey Innocent III., 4715  
took part in the Third Crusade, 1589  
**Philippaugh**, battle of, 1896  
**Philippa de Bouet**, Chaucer's wife, 3328  
**Philippa of Gaunt**, 3354  
**Philippa of Hainault**, wife of Edward III., saved the citizens of Calais, 750, 2533  
**Philippa, Queen**, at Calais, 5331  
**Philippi**, battle of, 5218  
**Philippines**, what they are, 1304  
**Philippines**, history and description of, with pictures, 2182, 2185 to 2187  
sold to United States, 3360, 3538  
**Phillips, Thomas**, a teacher who encouraged Chatterton, 5318  
**Phillips, Wendell**, as anti-slavery leader, 2009  
**Philology**: see Language, Reading Words, etc.  
**Philopomen**, a famous Greek, 1306  
**Phlox**, plant, 572, 1074  
**Phoebus Apollo**, the sun god, 84  
**Phonicians**, bartering with the Britons, picture in colour, face 190  
defeated by Greeks, 1308, 5129  
rise to power, 5122  
were great explorers, 53, 279  
**Phoenician wars**: see Punic wars  
**Phoenix**, a golden pheasant, 1515  
**Phoas**, what it is, and picture, 2587, 2589  
**Photograph**, box (the) that speaks to us, with pictures, 5686  
effect of trumpet, 5021  
invented by Edison, 3091  
invention of, 4449  
way of studying sound waves, 4917  
**Phosphorescence**, what it is, 3694  
**Phosphoric acid**, 1798  
**Phosphorus**, an element, 773, 1294  
often poisons people, 776  
**Photography**, how a camera takes a picture 39  
how the camera takes a photograph, pictures 41  
how to photograph without a camera, with pictures, 2685  
how to take faked photographs, 4666  
photographs taken on a table, pictures, 4665  
photography on a table, 4665  
what a photograph is, 39  
what the word means, 4548, 4604  
why developed in a red light, 1993  
**Phrases**, foreign words and phrases, 5698  
the meanings of phrases, 5633  
**Phrenology**, its use, 4444  
why it cannot tell about the brain, 3716  
why it cannot tell about the character, 2544  
**Physics**, balancing feats, 5659  
what it means, 344, 3465  
**Piano**, experiment with held notes, 4915  
good and bad pianos, 4914  
home of fairies and goblins of music, 250  
how it is made, pictures, 1016  
how it plays, 510  
how to sit at the piano, 3291

# INDEX

- Piano**, how we got the piano, 1015  
how we should play, picture, 3291  
the keyboard, pictures, 250, 3427  
tuning of pianos, 4914  
what over-strung means, 4914  
why things jingle when we play, 4915
- Picard, Jean**, discovery of size of earth, 1661
- Pickens, Andrew**, 990
- Pickersgill, Mrs. Mary**, made the flag that Francis Key referred to in the Star-Spangled Banner, 2955
- Pickett's Charge**, 2016
- Picking plums**, game, 5106
- Pickwick Papers, The**, story of the book, with picture, 2431
- Picnic**, preparing a lunch-basket, picture, 3615
- Picts**, in Britain, 198
- Picture of a golden deed**, story, 3790
- Picture frames**, how to make, with pictures, 1723, 1923, 4031
- Picture puzzles**, 1818, 3175, 3282, 3285, 3389, 3398, 3510, 3518, 3616, 4756, 4766, 4774, 4890, 4999, 5114, 5458
- Pictures**, built up from squares, 1073  
distance in a picture, 1642  
drawn with wrong perspective, 4881  
how to draw a picture with 12 lines and a dot, 5454  
little talk about pictures, 4585  
making spinning, 5455  
why some faces in pictures seem to follow us, 1896
- Piddock**, a name for the pholas, 2587
- Pied flycatcher**, lives on flies, 2218
- Piedmont**, a province of Italy, 3012, 3024
- Pierce, Franklin**, administration, 3536  
as president, 2009  
picture, 3532
- Piercy, Captain**, in command of the Countess of Scarborough, 2898
- Pierpont, John**: see Poetry Index
- Pig**, different kinds, 384; with pictures, 383  
eats snakes, 1380  
how long it lives, 2328  
how to make a stuffed pig, 829  
intelligence of, 5328  
three little pigs, story, with pictures, 4219
- Pigalle, Jean Baptiste**, a sculptor, 4162
- Pigeon**, different kinds, 2214; with pictures, 2213  
how it finds its way, 1371  
how long it lives, 2328  
how the pigeons were divided, story, with picture, 5159  
the pigeon and the magpie, legend, 2744
- Pigment**, causes chameleon's change of colour, 2458  
colouring matter in the skin, 157, 2415, 4215
- Pigmies**, of Africa, 5569
- Pigtail**, origin of, 116
- Pike**, its life-story, 2680; pictures, 2679
- Plades**, hero of a story, 5312
- Platons, Mount**, hotel at the top of, 2960
- Pilchard**, what sort of fish it is, 206
- Pilgrimages**, to holy places, 1585  
to Mecca and Medina, 3876
- Pilgrim Fathers**, how they sailed to America, 1022
- Pilgrims**, the, 518  
voyage of, pictures, 515
- Pilgrims**, the, a group of rocks, 5428
- Pilgrim's Progress**, story of, with pictures, 1115, 1135  
written by Bunyan, 1028
- Pillar-box**, posting and clearing letters, pictures, 3322
- Pillars of Hercules**, 3351
- Pillars of Solomon**, trick, and picture, 2870
- Pin millipede**, 3296; picture, 3297
- Pilon, Germain**, a sculptor, 4162
- Pilot fish**, 207; picture, 208
- Pimpernel**, closes its flower early, 3950
- Pin**, how pins are made, with pictures, 288  
how to support a plate on a pin, 98  
point, under microscope, picture, 2325  
why it gets hot if rubbed, 3094  
why we hear the scratching of a pin at the other end of a pole, 3385
- Pinckney, Charles Cotesworth**, 1394; portrait, 1395
- Pin-cushion**, how to make, and picture, 2871, 2872
- Pindus Mountains**, 3149
- Pine**, description of sugar-pine, 5438
- Pine**, description of white-pine, 5438  
how a pine forest is carpeted, 3951  
picture, 5439  
pine-cone decoration, picture, 4349  
sugar, picture, 5441  
white, picture, 5443
- Pineapple**, gathering pineapples, picture in colour, 645  
where it grows, 642, 645
- Pineda**, 280
- Pine marten**, 140; pictures, 51, 137
- Pine-Tree State**, why Maine is called the, 5438
- Pink**, keeps green in winter, 1818  
origin, 5270  
picture, 5275  
related to carnation, 5270
- Pins and needles**, its cause, 2450
- Pinster-flower**: see Azalea
- Pinson**, 258
- Pipe fish**, 210; pictures, 209
- Pipes**, briar wood, 5524  
bursting of water-pipes, 5524  
how they carry water, with pictures, 2105
- Pirates**, Blackbeard, 523  
Capt. Kidd, 525  
of Tripoli, 3533  
on coast of Africa, 4280  
Sir Walter Raleigh, 5322
- Pisa Cathedral**, Leaning Tower at, 303, 3018  
Leaning Tower, picture, 306
- Pisano, Andrea**, a sculptor, 1254, 4161
- Pisano, Niccola**, an Italian sculptor, 4161
- Pistil**, of a flower, 3736
- Pitch**, natural lake in Trinidad, 1878  
what it is like, 5198
- Pitchstone**, game, 5106
- Pith sailor**, how to make, with picture, 3070
- Pitt, William**, 884
- Pitt, William**, the Younger, Act of Union passed by, 1096  
statue in Westminster Abbey, 1100  
story of him as a statesman, 2384  
pictures, 2379, 3705
- Pittsburg Landing**, battle at, 2013
- Pit-viper**, a family of snakes, 1390
- Pixies**, of Land's End, story, 1796
- Pizarro, Francisco**, assassination, 4504  
conquest of Incas, 4502  
founded Lima, 4574; pictures, 4501
- Plague**, Black Death in England, 750  
Black Death in Norway, 3594  
Great Plague of London, 1028, 1160  
how it affected places long ago, 1179  
how it came to Eyam, 625  
outbreak in Moscow, 3631  
picture, 1025  
plague-stricken (the) home, extract from, 5596
- Plagiodon foxus**, a kind of mud-fish, 2448
- Plaloe**, 206; picture, 206
- Plains of Abraham**: see Quebec, battle of
- Planchette**, why does it move when we put our hands on it, 5578
- Plane**, how to use, and picture, 338, 339
- Plane-tree**, and picture, 3452
- Planets**, contain hydrogen, 2427  
how human characters were connected with them, 1940  
how the planets travel round the sun, picture 151  
how they are changing, 2283  
how they got their names, 2234  
how to find length of planet's year, 3762  
Kepler's laws of their motion, 3547  
law of gravitation, application to, 3761  
life on the planets, 3436, 3437  
move round the sun, 143, 1943  
move round the sun in an ellipse, 2424  
planets in their different sizes, picture, 2423  
raise tides on the sun, 2280  
satellites to the sun, 3032  
seven great planets circle round sun, 147  
shine by the light of the sun, 910  
supposed to influence men's lives, 2507  
the sun's family of worlds, 2423  
their distance from the sun, 150  
their paths in the sky, 2279  
their sizes compared, 1944  
why they do not fly off into space, 3674  
why they do not get in each other's way, 3095  
why we cannot get to other planets, 4119
- Planckton**, what it is, 4824

# INDEX

- Plantagenet kings**, 2702  
**Plantain**, how it spread in America, 3828  
**Plantain-eater**, bird, 1748  
**Plant bug**, picture in colour, face 3140  
**Plantin**, firm of printers, 3464  
**Plants**, a plant's wonderful secret, 227  
 are good in a sick-room, 1371  
 armoured, 4610, 4486, 4492, 4494  
 can be grown by electricity, 3689  
 eyes of a plant, 4213  
 give out oxygen, 2077, 4748  
 grown in the dark, 1134  
 grown without soil, 2563  
 habits of plants and flowers, 3949  
 hidden names of plants, picture puzzle, 4999, 5114  
 how manure makes them grow, 3973  
 how the seed makes plant's colours, 4442  
 how they are formed, 1134  
 how they grow on a bare wall, 3438  
 how they have to struggle for life, 3834  
 how they live on air, 170, 285  
 how they resist cold, 3094  
 how they see and feel, 2796  
 how they travel, 3827  
 how to keep them cool and moist, 1074  
 how to make a straight line for planting, with picture, 830  
 how to plant and thin, 573  
 how to plant out, 3278, 3616  
 how to pot plants, 3826  
 how to protect pot plants, 2254  
 how to protect tender plants, with picture, 2134  
 how to repot, 234  
 how to stake, with picture, 573  
 how to transplant, 830  
 how to treat pot plants, 3726  
 insect-catching plants, 2097, 3539, 3541, 5030, 5031  
 leaves of water and land plants, 4961  
 necessary for life, 168  
 need nitrogen, 3340  
 of the seaside, 5185  
 of two worlds, 4417  
 parasitic, 3830, 4418  
 poisonous, 4286, 4288, 4289, 4416, 4417, 4418, 4486, 4488, 4490, 4494, 4495, 4616, 5438, 5626  
 production of new varieties, 2773  
 rock-loving, 4833  
 sensitive plants, 4118  
 stinging, 4290, 4292  
 the families of plants, 4109  
 the first living things, 169, 360, 4115  
 the first plants, 167  
 their importance, 63  
 watering of, 927, 3278  
 what a plant is and does, 3731  
 what are these plants? puzzle, 5108, 5202  
 where they get their salts from, 1987  
 why some are poisonous, 3383  
 why some plants are always green, 1778  
 why they bear flowers, 38  
 why they do better in pots with a hole in the bottom, 3433  
 why they have Latin names, 4235  
 why they sleep at night, 1265  
 wonder worker (a) in, 2773  
**Pictures of Plants**  
 grown in the dark and light, 229  
 how they turn to the light, 2796  
 insect-eating plants, 3541  
 plants forming stars and rosettes, 3975  
 plants that imitate others, 3831  
 plants that stored up sunshine, in colour, face 798  
**Fiassey**, battle of, 1094, 1704  
**Flaster of Paris**, what it is, 1800  
**Plata, Rio de la**: see Rio de la Plata  
**Platens**, battle of, 5064, 5129  
**Plates**, how they are made, with pictures, 4477  
 how to support a plate on a pin, with picture, 98  
 vibrations of a plate experiment, 4916  
 why a wet plate gets dry if left alone, 2505  
**Platinum**, its specific gravity, 3816  
 used in electric lighting, 658  
**Plato**, Greek philosopher, 1306  
 pictures, 1307, 4625  
 pupil of Socrates, 5129  
 teaching in his open-air school, a picture, 5510  
 what he taught, 4617  
**Plato**, a volcano in the moon, 2223  
**Platt, John James**: see Poetry Index  
**Platypus**: see Duck-billed platypus  
**Play**, why it is good for children, 3566  
**Playfair, Lord**, scientist, 854  
**Playgrounds**, in New York City, 3198  
**Plays**, Robin Hood, 5522  
 When did you last see your Father? 5531  
**Plaza**, the, picture, 5183  
**Pleasure**, why do we get excited when pleased, 5383  
**Plebeians**, oppressed by Patricians, 5261  
 the lower classes of Rome, 414  
**Pleiades**, constellation, scientific name for the Seven Sisters, 1270  
 how to find them in the sky, 2612  
 legend of the Pleiades, 3314  
 picture, 2617  
 what the stars represent, 4518  
**Plesiosaurus**, fish-lizard, pictures, 44, 49  
**Plimsoll, Samuel**, bill regulating loading of ships, 685, 1574  
**Pliny**, historian, wrote about amber, 2113  
**Pliny the younger**, letter describing the destruction of Pompeii—an extract, with pictures, 5314  
**Plough**, an implement, why it is used, 248  
 how it is used, 4082  
 improved, 2668  
 pictures, 248, 4082  
**Flower**, bird, 1518, 1630  
 golden, 1518  
 pictures, 1517, 1959  
**Plum**, grows best on English soil, 650  
 how it is formed, 2075  
 how its fruit is made up, 4110, 4342  
 new varieties of, 2776  
 plums growing, picture in colour, 650  
**Plume-thistle**, dwarf, 4424  
 picture, 4419  
**Plymouth**, Massachusetts, 1022  
 story concerning colonial days in, with picture, 2245  
**Plymouth Colony**, 516, 518  
 its lands called New England, 3621  
**Plymouth Company**, 513, 525  
**Plymouth Sound**, and breakwater, picture, 4436  
**Pneumatics**, what the word means, 4604  
**Po**, a river of Italy, 2960, 3012  
**Poacher's silence**, story of, 3660  
**Pocahontas**, 1329  
**Pocket-gopher**, 672: picture, 667  
**Pocket-handkerchief**, handkerchief through a microscope, picture, 2324  
 how to embroider, 1507  
 the wizard's pocket-handkerchief, trick, with pictures, 2488  
**Poe, Edgar Allan**, life, 1482  
 memorial to, 4849  
 poems: see Poetry Index  
 portrait, 1475  
**Poe**, four great English poets, 3327  
 how he thinks, 4944  
 the poet, the goblin, and the donkey, legend, 2377  
**Poe Laureate**, his work, 1883  
**Poetry**, capping verses, game, 5113  
 different kinds of verse, 343  
 earliest English poetry, 469  
 how to read, 699  
 how to remember, 821  
 our feelings in poetry, 1557  
 poetry of action, 1121  
 poetry of common things, 1273  
 poetry of Nature, 2192  
 poetry of youth and manhood, 1031  
 the music of words, 83  
 the poets and childhood, 921  
 what dramatic poetry is, 93  
 why we should read poetry, 563  
**For poems and authors of poems, see special Poetry Index, and names of authors**  
**Poe's narcissus**, 5272  
**Pointer**, a dog, and picture, 503  
**Poison**, arsenic in wall paper, 5575  
 can metals be poisoned? 5486  
 causes spasms, 4440  
 headache-powders, 5643  
 how poisons act, 4587  
 how to treat cases of poison, 5110



# INDEX

**Poison**, in animals, 5021  
in plants, 3383

**See also Plants, Poisonous**

**Poison-ivy**, 4494  
berries, 4493  
**Poitiers**, battle fought at, 750  
town in France, 2399  
**Poker**, why water crackles when a red-hot  
poker is put in it, 3095  
**Poker-work**, how to do, 1280  
**Pola**, a naval port of Austria, 2860  
**Poland**, became a Russian province, 3632  
invaded Russia, 3628  
its many changes, 2852  
King becomes King of Bohemia, 2852  
Poles settled in Galicia, 2852  
seized by different rulers, 2578, 3631  
troops with prisoners, picture, 2850  
united to Lithuania, 3626  
war with Sweden, 3596  
wars with Turkey, 2528, 2850, 3154, 3158  
**Polar bear**, its habits, 141; picture, 138  
why it is white, 3410  
**Polar exploration**, accounts of various expedi-  
tions, 4719  
men who searched for the Poles, 4725  
Mount Erebus, face 4719  
Peary's discovery of North Pole, 5212  
Peary's route, 4721  
regions round the Poles, 4719  
Shackleton discovered South Magnetic Pole,  
4438, 4730  
Shackleton's expedition, 4728  
the world around the Poles, 4719  
various expeditions and scenes, 4723  
**Polarisation of light**, 5173  
**Polar star**, guides the sailors, 2235  
has changed its position, 4438  
how to find it, 2612  
pictures, 152, 2611, 2613, 2617  
**Folders**, drained marshes in Holland, 3456  
**Pole, Cardinal Reginald**, 845  
**Polecat**, 140; picture, 137  
**Police**, Royal Northwest Mounted, 4577  
why those of London are called "bobbies"  
and "peelers," 5382  
**Political Parties, Canadian**, Family Compact,  
3901  
**Political Parties, United States**, Abolitionists,  
2006  
Constitutional Union Party, 2010  
Democratic split, 2010  
Democrats and Republicans, 1394  
Republican Party, 2009  
Tories and Whigs, 984, 1830  
**Polk, James K.**, administration, 3535  
as president, 1830  
picture, 3532  
**Pollen**, bee taking pollen, picture, 3732  
carried by insects, 1265, 2826  
carried by the wind, 38  
how it pierces the pistil, 3736  
use in fertilisation of flowers, 2775  
what it is, 45  
**Pollux**, a star, 2614; picture, 2617  
**Polo**, Marco, explored China, 110  
his adventures, 54  
his walk to China, 3938  
pictures, 55  
wrote about Japan, 365  
**Polyanthus**, how it is produced, 5271; picture,  
5277  
when to plant, 1716  
when to transplant, 830  
**Polyanthus narcissus**, 5272  
**Polyclotus**, a great sculptor, 4160  
**Polydorus**, a sculptor, 4166  
**Polyneices** (not Pobyneices), his sister's sacri-  
fice, 468  
**Polynesia**, part of Australasia, 1466  
**Polypemus**, a one-eyed giant, 69  
**Polyps**, pictures, 2334, 2337  
**Pomerania**, claimed by Sweden, 2528  
**Pompel**, destruction of, with pictures, 422, 1263,  
5268, 5314  
faithful unto death, picture, 1263  
ruins of city, pictures, 422  
wall-paintings found at, 4585  
**Pompey**, flight from the battlefield, picture, 412  
rise to power, 417

**Ponce de Leon**, 258  
**Pondicherry**, French factory at, 1702  
**Pons Asinorum**, what it means, 5233  
**Font-Gravé**, establishes trading-post at Ta-  
dousac, 3619  
**Pontifex Maximus**, chief of the Roman priest-  
hood, 2631  
**Fontyrrid**, its bridge, 19  
**Pony**, means of communication of, 5328  
**Poor**, the treasure of the, story, 2742  
**Pop**, origin of the word, 2227  
**Pope, Alexander**, a famous writer, 2540  
his life, 3904; portrait, 3907  
what he said of Nature, 3240  
**Pope, General**, at second battle Bull Run, 2016  
**Pope**, became powerful, 2524, 3014  
disapproved of the freeing of Italy, 3024  
disputed with German emperors, 2524  
head of the Western Church, 3150  
how Henry VIII. overthrew the pope's power  
in England, 2708  
the pope who ran away, story, 459  
**Pogon**, how to make from elder, with picture,  
3070  
how to make from quill, with picture, 4890  
what it is, 2227  
**Poplar**, size and use, 5429  
white, or yellow: see Tulip-tree  
tree, pictures, 3190  
**Popocatepetl**, 4386; picture, 4381  
**Poppa Sabina**, Nero's wife, 530  
**Poppy**, an annual, 233  
California, improvement by Burbank, 2774  
horned, description, 5190, with picture, 5187  
must not be transplanted, 3278  
scarlet, 4616, with picture, 4613  
the poppy family, 4110  
**Poppy anemones**, 5270  
**Population**, its increase, 1644  
**See also under Various Countries**  
**Porcupine**, 1068  
pictures, 51, 671  
what kind of animal it is, 669  
**Porcupine grass**, name for spinifex, 1384  
**Pork**, production of in U. S., 2658  
**Porpoise**, what kind of animal it is, 1088  
**Porsena**, king of the Etruscans, 3884  
**Port Arthur**, in China, 3753  
town on Lake Superior, 1240  
**Port Darwin**, town of South Australia, 1360  
**Porteous, John**, hanged by a mob, 1759  
**Porter, Anna Maria**, wrote novels, 2595  
**Porter, David**, commander of the Essex, 2902  
**Porter, General**, picture, 2017  
**Porter, Jane**, novelist, 2594; portrait, 2593  
**Fortinari, Beatrice de**, Dante's love for, 5219  
**Port Jackson**, convict settlement, 1356  
**Portland Harbour**, picture, 4434  
**Porto Novo**, king presiding over council, pic-  
ture, 4261  
**Porto Rico**, history and description, 2188  
purchased, 3638  
West Indian island, 1877  
**Port Philip**, a town in Victoria, 1358  
**Portrait**, making an outline, 5521  
**Port Royal**, captured, 3622  
taken, 2014  
town settled, 3619  
**Port Royal, S. C.**, 262; captured, 880  
**Portsmouth**, harbour, picture, 4434  
**Portugal and Portuguese**, African possessions,  
4262  
Columbus and the king, 56  
connection with Brazil, 4506, 4568  
expedition to Canada, 3617  
explorers, 3354  
French driven from Portugal, 2276  
history and geography, 3351  
in Hawaii, 2182  
Portuguese driven from Ormuz, 3880  
Portuguese in China, 112  
route to Japan discovered, 366  
trade with India, 1702  
**Portuguese East Africa**, native village, pic-  
ture, 4259  
**Portuguese man-of-war**, sea nettle, 2341  
picture, 2337  
**Forus**, king of India, 1306, 1700  
**Positive electricity**, what it is, 2115  
**Positivism**, a religion, 5249

# INDEX

- Postage**, how our letters come to us, with pictures, 3521  
reduced, 3537  
why letters have to be stamped, 4116
- Postcard**, how to pass through a postcard, with picture, 3518
- Postel, William**, life of, 5470
- Posting**, game, 4027
- Post Office Department, The U. S.**, 1596
- Posture**, game, 1614
- Potash**, what it is, 2506
- Potassium**, its specific gravity, 3816
- Potassium chloride**, how to form, 1801
- Potassium sulphate**, what it is, 1801
- Potato**, contains much water, 1172  
how to dig up, 3826  
how to grow, 3176, 3514  
how to store, 4353  
used for making alcohol, 1872  
why it does not rot, 4119
- Potatoes**, first grown in Ireland, 5394  
great crop of United States, 2422
- Potato spirit**, causes death of African natives, 1872
- Potato woman and her pig**, how to make, with picture, 1079
- Potential energy**, what it is, 3552
- Potiphar**, Joseph's master, 2910
- Potol**, silver mines, 4504, 4572
- Pot-pourri**, how to prepare, with picture, 1722
- Potsdam**, city in Prussia, 2748
- Potter, Edward C.**, sculptor of animals, 4846
- Potter**, how he works, with pictures, 4477
- Pottery**, made by the Greeks, 5126
- Poultry**, production of, in U. S., 2658
- Poultry-keeping**, as a hobby, 4671
- Pounds, John**, how he taught poor children, with picture, 3790
- Pouter pigeon**, 2215; picture, 2213
- Poutrincourt**, brings over colonists, 3619
- Powell-Cotton, Major**, hunt for okapi, 1006
- Powers, Hiram**, sculpture of, 4842
- Powhatan**, 1329
- Prague**, capital of Bohemia, 2576, 2858
- Prairie-chicken**, dwelling, 5416  
Western grouse, or, 1518
- Prairie-dog**, habits, 670; picture, 667
- Prairies**, plains of North America, 3075
- Prasovia**, how she saved her father, 2368
- Prawns**, French prawn-fisher, picture, 2395  
prawn, picture, 2585  
what they are like, 2587
- Praxiteles**, sculptor, 4160
- Prayer wheels**, used in Tibet, 3938
- Praying mantis**, 3263  
pictures, face 3140, in colour, 3259
- Precipices**, picture, 408
- Precipitate**, how it is formed, 1668
- Presburg**, old capital of Hungary, 2576
- Presbyterianism**, Scottish Church, 1889
- Prescott, William Hickling**, biographical note, 5089  
Conquest of Mexico, extract taken from his, 5089
- President (The)** of the United States, his powers, 1595, 1596
- Presidents of U. S.**, administrations of the several, 3533  
five famous, 787  
homes of, 2420
- Pressgang**, at work, picture, 2027
- Pressel, John**, an artist, 5694
- Pressure**, fluid pressure, 3946, 3948  
the different kinds, 3941
- Preston-Pans**, battle of, 1498
- Prism**, king of Troy, 67
- Priest's tale**, in *The Canterbury Tales*, 438
- Prime number**, what it is, 5053
- Primogeniture**, what it means, 3763
- Primrose**, 4609; with picture, 4612  
bird's eye, 5038; picture, 5035  
how to grow, 830
- Prince**, prince's five servants, story, with pictures, 4270, 4271  
who gave up his freedom, story, 3168  
who was poor, story, with pictures, 2369
- Prince Albert**, admitted Dominion, 4105
- Prince Edward's Island**, 1244, 1248  
becomes a province, 3900  
Canadian town, 5368  
description, 5804
- Prince Edward's Island**, minerals in, 5599  
refused to enter Canadian confederation, 4102
- Prince Flinlin and his mamma**, poem, and picture in colour, 3844
- Princes in the Tower**, 756, 1980, 4638  
picture, 1981
- Prince's Island**, village, picture, 4259
- Princess and King Grislybeard**, story, with picture, 1189  
search for the real princess, story, 324  
princess's golden ball, story, with pictures 1316, 1317  
princess who became a goose-girl, story, with picture, 2492  
silent princess, story, with picture, 4797  
strange adventures of a princess, *Canterbury Tale*, 439
- Printing**, carried on in Holland, 3463  
fancy lettering, and pictures, 4879  
men who gave us printing, 3567  
of this book, with pictures, 891  
what type-metal is made of, 1870
- Prioresse's tale**, in *The Canterbury Tales*, 443
- Priscilla**, 2261
- Prism**, what it is, 5041
- Prisoner's base**, game, with picture, 3920
- Privateers**, Alabama (The), 2015  
American, in 1812, 1399  
Sir Francis Drake, 266  
substitutes for war vessels, 2897
- Privet hawk moth**, its life-story, 2986  
picture in colour, face 2982
- Proboscis monkey**, 606; picture, 605
- Procopius**, a writer, 3152
- Procter, Adelaide Anne**: see *Poetry Index*
- Procter, Bryan Waller**: see *Cornwall, Barry*
- Proctor**, defeated, 3901
- Procyon**, star, 2614; with picture, 2617
- Proserpine**, queen of underworld, story, 5316
- Protective colouring**, in animals, 1776
- Protective mimicry**, among animals, 3407
- Protector**, name for Cromwell, 1025
- Proteids**, how they rebuild the body, 2699
- Protestants**, persecuted in France, 2394  
persecution in Great Britain, 2534, 5067  
persecution in the Netherlands, 3460  
what they are, 2527
- Proteus**, the, Greely's ship, 5214
- Protoplasm**, how it breathes, 1633  
what it is, 1103, 1181, 4597  
will probably be made by chemists, 4120
- Protoplasmic poisons**, what they are, 4597
- Protractor**, how to make, with picture, 445
- Proverbs**, a game, 2137, 5202
- Proverb Stories**, 5654
- Providence**, 520
- Providence**, the, ship under Paul Jones' command, 2898
- Prussia**, became great, 2579  
enlarged its territory, 2578  
interfered with the Netherlands, 3463  
king proclaimed German emperor, 2277, 2580  
kingdom in Germany, 1640, 2630  
wars with Napoleon, 2530, 2575  
Wupper Valley railway, picture, 91
- Prussian blue**, how it is made, 4508
- Prussian carp**, picture, 2679
- Prussic acid**, how it affects the blood, 1388  
how it is formed, 1797  
its graphic formula, 1798  
why it is called weak, 1801
- Psyche**, legend of, with picture, 1902, 1903
- Psyche moth**, 2993
- Ptarmigan**, 1518, 3408; pictures, 1517, 1777  
American, 1518
- Pterodactyl**, flying reptile, picture, 44
- Ptolemies**, Egyptian kings, 4790
- Ptolemy, Claudius**, astronomical studies, 1656
- Public baths**, and swimming, 3199
- Publius Valerius**: see *Valerius, Publius*
- Puddingstone**, stone, with picture, 5197
- Pueblo**, taken by the United States, 4390
- Pueblo Indians**: see *Hopl*, the
- Puff-adder**, 1380; picture, 1379
- Puffin**, bird, 1632; picture, 1631
- Pugachev**, led Russian insurrection, 3629
- Puget, Pierre**, sculptor, 4162
- Pullman, George M.**, as inventor, 2669
- Pulse**, how Galileo measured the pulse, 1658  
how it tells temperature, 3972  
position at wrist, picture, 1580

# INDEX

**Pulse**, what it is, 3971  
 what it tells us, 4344  
 why it beats, 1580  
**Puma**, animal, 140; picture, 136  
**Pumice-stone**, what it is, 482, 3034, 3229  
 why it removes stains, 3090  
**Pump**, how it works, 2112, 3947; picture, 2112  
**Pumping-engines**, use, with picture, 2108  
**Punch**, rock, with picture, 1058  
**Punch and Judy**, in an old-time village, picture, 193  
 story of, with picture, 1907  
**Punctuation**, amusements with stops and commas, 5668  
 mistakes caused by wrong, 5668  
**Puncture**, how to mend a tyre, 4249  
**Punic wars**, 5262  
**Punjab**, conquest by the British, 1706  
 conquest by the Greeks, 1700  
 its meaning, 1546  
**Punning**, case of association of ideas, 4941  
**Puno**, port of Peru, 4572  
**Punta Arenas**, town, 4572  
**Pups**, sort of chrysalis, 43  
**Pupin, M. L.**, as inventor, 2670  
**Puppy**, and the cat, story, 504  
**Purcell Mountains**, part of Selkirks, 5607  
**Paritans**, colonisation by, 518  
 origin of name, 516  
**Purple**, dye made by Phœnicians, 5122  
 how it is made, 1935, 4508  
**Purple emperor**, butterfly, 2992  
 picture in colour, face 2982  
**Purple heron**, 1954; picture, 1950  
**Purple loosestrife**, used as a tonic, 4964; with picture, 4964  
 what it is like, 4966  
**Purple molinia**, grass, picture, 1342  
**Purse**, conjuring tricks, with pictures, 2566, 3068  
 how to make in crochet, with picture, 4028  
**Puss in Boots**, story, with picture, 1104  
**Puss in the corner**, game, 2571  
**Puss moth**, and caterpillar, 2991, 3416  
 pictures, face 2982 in colour, 2991  
**Putnam, Israel**, 884, 984  
 portrait, 985  
**Putting on the donkey's tail**, game, 5000  
**Puzzles**, answers to, 5530  
 mysterious (the) Jacob's ladder, 5667  
 to form a square, 5667  
**Pydna**, battle of, 5264  
**Pygmalion**, his statue of Galatea, 962  
**Pym, John**, opposed Charles I., 1024, 1894  
 portrait, 1896  
**Pyson, Richard**, printer, 3574  
**Pyramids**, battle of the, 4258  
 built from nummulites, 2336  
 Great Pyramid, 4779, 5004  
 Great Pyramid, pictures, 4783, 4792, 5007  
 how their story was lost, 2802  
 of Gizeh, 5004; picture, 4783  
 their building, with picture, 4784, 4785  
 their object, 4780  
**Pyramids**, game, 5106  
**Pyrenees**, separate France from Spain, 2392,  
 3353; their extent, 4497  
**Pyrrhus**, fought against Rome, 2002, 5262  
**Pytheas**, geographer, 5124  
**Pythias**, his friendship for Damon, 626  
**Python**, 1374; pictures, 51, 1375

## Q

**Quail**, a partridge, 1520; picture, 1517  
**Quakers**, beliefs of, 521  
 brave little Quakeress, 1327  
**Quaker's stroke**, story, 1064  
**Quaking grass**, picture, 2978  
**Quarry**, picture, 2881  
**Quartz**, where it is found, 4246  
**Quatrain**, what it is, 343  
**Quatre Bras**, battle of, 4364  
**Quebec**, a capital of Canada, 1240, 1244, 1246, 4100  
 appearance of, 5428  
 attack upon, 3898  
 battle of, 880, 885, 984, 1094, 1247, 3622  
 colony of, 3620-22  
 failure of English attack on, 3622  
 in Canada, 1240, 1244, 1246  
 scenes in, picture, 4101  
 settled, 3618  
 supplies destroyed by English fleet, 3620

**Quebec, Province of**, created, 4102  
 divided into Upper and Lower Canada, 3900  
 minerals in, 5599  
**Quebec Act**, 3897  
**Queen**, a queen's farewell to France, picture, 847  
 the death of a, 5502  
 who gave up her boy, story, 1664  
 who hid by night, story, 4638  
 who was turned away, story, 4642  
**Queen Anne's War**, 880  
**Queensland**, 1360  
**Quetzal**, bird, 1748; picture, 1736  
**Quiberon Bay**, battle of, 1094  
**Quicklime**, what happens when water is added, what it is, 1669, 4338  
**Quicksands**, what they are, 3971  
**Quicksilver**, what is quicksilver? 154  
 why does it run away when we touch it? 154  
 why does it roll into little balls? 154  
**Quill**, popgun from, with picture, 4890  
**Quill pens**, use of, with picture, 3401  
**Quintianus**, governor of Sicily, 1013  
**Quintus Cicero**, his death, 4071  
**Quirinal Hill**, 5260  
**Quito**, where it is, 4506, 4574  
**Quoits**, garden. how to play, 3614

## R

**Rabbit**, behaviour of young, 5479  
 dwelling, 5414  
 how to keep rabbits, 452  
 life-story, 384, 2089, 2325  
 pictures, 51, 249, 383, 453  
 the different kinds, 504  
**Rabbit-hutch**, with picture, 454  
**Raceme**, what it is, 5269  
**Racket-tailed humming-bird**, 1745  
**Raccoon**, animal, 864; picture, 865  
**Radiant energy**, 5039  
**Radiant heat**, comes from the sun, 1061  
 its laws, 4320, 5039; its rays, 5176  
 made of waves in the ether, 1421  
 the rate at which it travels, 4180  
**Radiation**, conditions for radiation, 4321  
 conveyed by ether, 4180  
 heat travels by radiation, 1061  
 what effect it has, 581  
**Radiation pressure**, 1776, 2497, 3840, 5040  
**Radicles**, the parts of a salt, 1801  
**Radio-active elements**, 4322  
**Radiolaria**, picture, 2340  
**Radishes**, how to sow, 719, 2971, 3278  
**Radium**, aid in building mountains, 3227  
 could change climate of North Pole, 4115  
 found in products of volcanoes, 3229  
 found in the sea, 2619  
 has wonderful properties, 544, 1295  
 how it makes heat, 637, 2621, 4322  
 is an element, 1372  
 made from uranium, 1419  
 may help to keep sun warm, 426  
**Raffia**, making a basket of, 5456  
**Raffia tape**, good for tying plants, 719  
**Raft-spider**, 3304; picture, 3299  
**Rags-and-tatters**: see Mallow, common  
**Ragwort**, flower, 4188; picture, 4184  
**Raid**, of the witches, story, 815  
**Raikes, Robert**, why he started Sunday schools, 3704; picture, 3701  
**Rail**, a bird that runs well, 1958  
**Railton, Wm.**, made Nelson Column, 1166  
**Railway signals**, their colours, 4509  
**Railway train**, a lighthouse railway in the air, 741  
 built up from squares, and picture, 1818  
 Cape to Cairo railway, 4262  
 colour pictures, 294, 296  
 electric, invention of, 4450  
 first to run in England, pictures, 615  
 first transcontinental, 3537  
 gyroscope train: see Mono-rail system  
 how it keeps on the rails, 918, 3973  
 how the engine works, 289  
 how the train was saved, story, and picture, 4957  
 importance in the U. S., 2665  
 improvements on, 2670  
 in central Asia, 3932  
 men who made the railways, 609

# INDEX

- Railway train**, pictures, in colour, 289, 294  
prehistoric cutting in Mexico, with picture, 4387  
showing space between rails, 4369  
speed of walking in a train, 777  
started in England, 1096  
stopping a train, 5166  
the earliest railways in England, 615  
the first in America, 609, 1828, 3534  
the first railway, 614  
the first railway engine, 612  
the second railway made, 613  
toy railway for garden, and pictures, 3610  
tube railways, 616  
why fields appear to move, 4750  
why it keeps on the rails, picture, 918  
why smoke seems to go other way, 1866  
why the pitch of the whistle varies, 2717
- Rain**, a rainy day, pictures, 1859, 3429  
British Guiana has heaviest rainfall, 1878  
forms drops, 624, 4339  
freshens the air, 1859  
has two acids, 2622  
how it melts rocks, 2621  
it can snow and rain together, 2073  
raindrops heavier than snowflakes, 3036  
smoke down chimneys a sign of, 5166  
speed of raindrops, 3672  
the first rain, 167, 360  
what becomes of it, 3429  
why is it sometimes heavy? 5384  
why it falls, 406  
why it is not salt, 2235  
why it rains more in winter, 3240  
why Scotland is so rainy, 3094
- Rainbow**, cannot be seen on both sides, 1642  
how it is made, 1859, 5041  
picture in colour, face 1858
- Rain-gauge**, with picture, 2969, 2970
- Rajah**, a prince, 1552; picture, 1701
- Rajpoots**, warriors of the Aryans, 1699
- Raleigh, Sir Walter**, attempt to found colony, 267  
friend of Elizabeth, 846  
gave Virginia its name, 1021  
life and imprisonment, with pictures, 5393  
pictures, 843, 3329  
poem: see Poetry Index  
portrait, 261  
sought for gold-mine, 4506  
used pitch from Trinidad, 1878  
when he lived, 2535
- Rameses II.**, oppressed the Israelites, 4787  
pictures, 4779, 5007
- Ramillies**, battle of, 2530
- Ramsay, Sir William**, and aurora borealis, 5252  
theory of smell, 4628
- Randall, James Ryder**, author of Maryland, My Maryland, 2957
- See also Poetry Index**
- Rands, William**: see Poetry Index
- Ranger**, the, war-ship, and the Drake, 2898
- Ranunculus**, garden varieties, 5270
- Raphael**, a great painter, 757  
buried in the Pantheon, 5267  
helped to design St. Peter's Church, 3018  
his picture of Plato and Aristotle, 1307  
his picture of the Child Jesus, 761  
his portrait of Jesus, 4700  
his work as a painter, 4586  
paintings on walls of Vatican, 4951  
picture of school of Athens, face 1301  
picture of the Madonna and Child, 4589  
pictures, 759, 4945, 4947, 4955  
story of his life, 4952  
worked with Fra Bartolommeo, 2790
- Rapunsel's golden ladder**, story, and picture, 2306
- Raspberry**, flowering, description, 4839  
how its fruit is made up, 4110  
pictures, 651, 4837  
requires much water, 3514, 3726
- Bat**, fondness for great valerian, 4970  
its life-story, 769  
pictures, 51, 771
- Bat-bat**, name for a bat, 769
- Batibon**, an interesting town, 2754  
famous temple near, 2755
- Bats**, communication between, 5328
- Bat's tail**, name for chain knot, 236
- Battler**, a warship, and picture, 2471
- Battlesnake**, its life-story, 1380; with picture, 1379  
lives with marmots, 670
- Baven**, 1846, 3408  
pictures, 51, 1744, 1847
- Bawlinson, Sir Henry**, his model of the tower of Babel, 3937
- Bay**, fish, 2448; picture, 2449
- Bayleigh, Lord**, on light, 4510
- Raymond**, count of Toulouse, 1587
- Bazor**, the sharp edge, through the microscope, picture, 2324
- Bazor-bill**, bird, with picture, 1630, 1631
- Reaction**, in chemistry, 1669
- Read, T. Buchanan**: see Poetry Index
- Reade, Charles**, his book, The Cloister and the Hearth, 4017  
life, 2314; portrait, 2307
- Reading**, town, 592
- Reading**, a first lesson in grammar, 1447  
different kinds of moods, 3491  
different kinds of pronouns, 3129  
how the animals got their names, 5233  
how to analyse a sentence, 4236  
how to analyse verses, 4239  
how to learn little words, 725  
how to parse a sentence, 4091  
little words of four letters, 965  
making new words from old ones, 2409  
more about verbs, 3369  
more pronouns and verbs, 3287  
primary lessons, based on nursery rhymes, 485; picture, 486, 727; picture, 728, 967; picture, 968, 1207; picture, 1208, 1452; picture, 1408  
the difference between one and two, 1685  
the difference between subject and object, 2169  
the meaning of words, 1929  
the parts of speech, puzzle, 4035  
the story of words, 4463  
the verb and its moods, 3423  
the words that describe things, 2649  
what an adverb is, 3707  
why an adjective is like an adverb, 3781  
words of two syllables, 1205  
words that time has changed, 4531  
words used in the place of nouns, 2889
- Reaping machine**, invented, 1828, 2668
- Reason**, for everything, 5248  
the value of it, 510
- Rebate**, in wood work, 1346, 1923
- Receptacle**, of a flower, 4110
- Reciprocity**, treaty of reciprocity between Canada and the United States (1854), 4100
- Recorde, Robert**, astronomer, 1657
- Recreation piers**, in New York, 3199
- Rectangle**, what it is, 5248
- Rectum**, is part of the bowel, 2345
- Reculvers**, an old Roman castle, 198
- Red**, a primary colour, 4508  
what happens when we see red, 4507
- Red admiral butterfly**, pictures face 2982
- Red ant**, in chrysalis stage, picture, 2945
- Red bartisia**, picture, 5188
- Red cardinal**, picture, 2055
- Red cross badge**, its origin, 2968
- Red daisies**, the land of the red daisies, story, with pictures, 708
- Red dead nettle**, picture, 4290
- Red deer**, 382; picture, 381
- Red-faced spider monkey**, 605
- Red goose**, name for the flamingo, 1958
- Red grouse**, picture, 1517
- Red-hot poker**, flower, 5272; picture, 5279
- Red-letter day**, what it means, 5535
- Redpoll's egg**, picture, 1744
- Red rattle**, lives on other plants, 3830
- Red Riding Hood**, story, and picture in colour, 2140
- Red Riding Hood dolls**, how to make, 341
- Red Sea**, is the short cut to India, 4252
- Redstart**, bird, 2067; picture, 2066
- Red underwing moth caterpillar**, 3413
- Reduction**, in chemistry, 1195
- Reduvius personatus**, an insect, 3416
- Redwing**, bird, 2058
- Reed**, Major Walter, helped to conquer yellow fever, 3200
- Reed**, used for writing, 3399
- Reed bunting**, 2067; picture, 2069

# INDEX

- Reed canary grass**, picture, 1343  
**Reed grass**, picture, 2981  
**Reed mace**, 4966; picture, 4963  
**Reed warbler**, 2057; pictures, 1744, 2063  
**Reef knot**, how to make, with picture, 235  
**Reeve**, the female of the ruff, 1968  
**Reflection**, how it is made, 3434  
in water, pictures, 3435  
not shadow, 5524  
the laws of reflection, 5177  
throws back light, 5642  
water can reflect from a distance, 3034  
**Reflex action**, what it is, 2878, 4444, 4745  
**Reformation**, in England, 2708  
its history, 4948  
the martyrs of, 5067  
upheld by the Netherlands, 3460  
**Reformers**, some famous reformers, 3687  
**Refraction**, effect it has on our sight, 581  
the breaking of light, 2230, 2319, 5177  
when a stick is thrust into water, 5685  
**Regina**, as a capital, 4105  
capital of Saskatchewan, 5368  
**Regard, Jean François**, traveller, 769  
**Regulators**, 982  
**Regulus**, going back to Carthage, picture, 417  
his sacrifice for Rome, 414, 5262  
how he went back to die, 5511  
**Reichstag**, German parliament, 2580  
**Reign of Terror**, in France, 1141, 2272  
**Reindeer**, introduced into Alaska, picture, 2180  
lived in this country, 192  
picture, 275  
useful to Laplander, 277, 3601  
**Reis, Philip**, made a telephone, 4317  
**Relief**, in sculpture, 4159  
**Religion**, early leaders of the Church, 4707  
some founders of religions, 2995  
**Rembrandt**, a great painter, 760, 4587  
his portrait of his daughter, 762  
pictures by, 4585, 4591; portrait, 769  
**Remigius**, bishop, 2064  
**Remus**, brother of Romulus, 5260  
**Renaissance**, in Italy, 3156, 3328, 4161  
**Rennet**, makes milk solid, 2792  
**Rennie, John**, bridge-building, 19  
**Repeater watch**, tells time in the dark, 1536  
**Reptiles**, at one time masters of the earth, 662  
flying reptile, picture, 961  
prehistoric reptiles, 46  
skeleton, picture, 3675  
the oldest animals, 1217  
various kinds, pictures in colour, 1225  
what they are, 661  
**See also Lizard; Brontosaurus**  
**Republic**, steamer, wreck, 3524  
**Republicans**, 1394  
**Resaca de la Palma**, battle of, 1832  
**Reservoir**, construction, with picture, 2104  
the Nile, 5399  
**Resonators**, effect on sound, 909, 4076  
of the voice, 4916  
what the tuning of resonators is, 4915  
what they are, 3756, 4597, 4914  
**Respiration**, a name for breathing, 1633  
**Rest**, a state of balance of forces, 3470  
how a thing is kept at rest, 3672  
**Rest-harrow**, plant, 4111  
**Resurrection plant**, 1677, 2663, 2664  
**Retort**, used for making gas, 393  
**Retriever**, a dog, 502; picture, 501  
**Renus River**, is a tributary of the Aar, 2964  
**Revenge**, ship that fought off Spaniards, 4205, 5395  
**Revere, Paul**, the famous ride, 983  
**Revolution. The American**, 977  
attempt to win over Canada, 3898  
effect on Canada, 3898  
how the colonies were lost, 1094  
Paul Jones during, 2897  
story founded upon, 4281  
two spies of the, 3811  
**See also Battles, United States history, Washington**  
**Reynolds, Sir Joshua**, a painter, 764, 4587  
famous men at his house, picture, 213  
pictures, frontispiece to vol. I., 762, 4592  
**Rhaecopus**, a toad, 1224  
**Rhampinitus**, treasure of, story, 1906  
**Rhea**, bird, 1426; picture, 1429  
**Rhine River**, its course, 2960, 3455  
its size, 1984, 2521  
**Rhinoceros**, education of young, 5481  
its life-story, 996  
pictures, 51, 994  
**Rhodanthe**, a lady of Greece, 190  
**Rhode Island**, colony of, 520  
**Rhodes, Cecil**, 1770, 4262  
**Rhodes, Colossus of**, picture, 908  
**Rhodes**, settlement by Spartans, 5124  
**Rhodesia**, in South Africa, 1766, 1768  
**Rhone River**, 2394, 2960  
**Rhubarb**, how to grow, 3176, 3514, 3726  
**Rhyme**, what it is, 93  
**Rhymes**, a game, 237  
game of making, 5448  
**Rhythm**, what it is, 699  
**Ribbon-fish**, a sea-fish, 2451; picture, 2449  
**Ribbon-work**, cushion-cover, with picture, 3286  
table-square, 2133  
**Ribs**, bind the chest, 1580  
**Rice**, **Mrs. Alice Megan**: see Young, Mrs. A. H. R.  
**Rice**, its value as food, 2925  
picture, 2923  
used for bread, 1144  
**Rice fields**, in Philippines, picture, 2183  
**Richard I.**, of England, fought with Robin Hood, 2605  
how he forgave his enemy, 2001  
in the Crusades, 596, 1589, 2704, 3878  
pictures, 1587, 1592  
prisoner, 2533  
ransom used to build walls of Enns, 2854  
**Richard II.**, of England, 752, 2704, 2862  
resigning the crown, picture, 751  
**Richard III.**, of England, murder of little princes, 1980, 4638  
reign, 756  
**Richard**, duke of York, slain, 2533  
was murdered with his brother, Edward V., 1980, 4638  
**Richard**, grandson of Rollo, his escape, story and picture, 5223  
**Richard**, the Fearless, 434  
**Richardson, S.**, life, 1728; picture, 1725  
**Richborough**, an old Roman castle, 198  
**Richelieu, Cardinal**, 2070  
**Richmond**, made capital of Confederacy, 2012  
point of attack, 2013  
**Richmond Hill**, legend, 1983  
**Rickshaw**, in Japan, 5560  
**Ride**, a girl's desperate ride, story, 2803  
a woman's ride in the sea, story, with picture, 4069  
**Ridley, Nicholas**, bishop, died for his faith, 5068; picture, 5069  
**Rienzi, Cola di**, led Roman citizens, 3020  
**Riel, Louis**, leader of rebellion; execution, 4104  
**Riel Rebellion**, its cause and suppression, 4104  
**Riggs, Mrs. Kate Douglas Wiggin**, life, 2049  
**Right-handed**, why we are, 3775  
**Right whale**, 1084  
**Rigi, Mount**, has a hotel at the top, 2960  
**Riley, James Whitcomb**: see Poetry Index  
**Rinehart, William M.**, sculpture of, 4844  
**Ring and coin**, trick, with picture, 1198  
**Ring-dove**, 2214; picture, 2213  
**Ringed plover**, 1780  
**Ringed snake**, 1378; picture, 1379  
**Ring-taw**, game, 5106  
**Rio de Janeiro**, harbour, picture, 4570  
in Brazil, 4506, 4568  
**Rio de la Plata**, an estuary, 4500  
useful for commerce, 4568  
**Rio Grande del Norte**, 4381  
**Rio Tinto**, has famous copper mines, 3360  
**Rip van Winkle**, the story of his adventures, with pictures, 4695, 4800  
**Rivers**, appear still because they are deep, 1576  
are a little salt, 1270  
are affected by the moon, 3091  
pictures, 409, 408, 2103  
their course depends on the land, 1989  
why the beds of rivers change, 1992  
why they are always moving, 5024  
why we cannot see the bottom, 1060  
**Riviera**, 2398, 3650  
**Rizzio, David**, was murdered, 3068  
**Rizzo, Antonio**, an architect, 1264

# INDEX

- Boach**, a fish, 2681; picture, 2679
- Boady**, McAdam's improvements, 158  
made by Romans, 270  
made high in the middle, 158  
why the sides meet in the distance, 1578
- Boanoke**, lost colony of, 941
- Bobber**, who saved a queen, picture, 755
- Robbers**, and the soldiers, trick, with picture, 2766
- Robert**, duke of Normandy, his life, 1587
- Robert I.**, the Bruce, king of Scotland, 120, 748, 3082; pictures, 3081
- Robert II.**, king of Scotland, 3084
- Robert III.**, king of Scotland, 3084
- Roberts, Charles G. D.**, life-work, 4472
- Roberts, Lord**, his march from Kabul to Kandahar, 2938  
praised the Sikh, 2548
- Robertson, James**, 1822
- Robertval, Seigneur de**, given the right to settle in Canada, 3618
- Robespierre, Maximilien**, 2274, 4062  
pictures, 4053, 4059
- Robin**, its life-story, 2054, 2061, 2328  
pictures, 1744, 2053, 3893
- Robin Hood** and his merry men, 5522  
the story, and pictures, 2601
- Robin Round Cap Well**, tale, 1321
- Robinson Crusoe**, the real Crusoe, 354  
the story of, with pictures, 1231
- Rob Roy**, story of novel, with picture, 1599
- Rochambeau, General Count**, 992  
portrait, 981
- Rochdale**, goblin builders of, tale, 1321
- Roche, Walter**, Shakespeare's teacher, 3330
- Rochester Cathedral**, 1158
- Rocket**, a firework, 5249  
used in building a bridge, 20
- Rocket**, engine, with picture, 616, 613
- Rock garden**, how to make, 1928, 2042  
pictures, 1928, 2042
- Rock kangaroo**, lives among rocks, 862
- Rockling**, is a fish in our sea pools, 1411
- Rock pigeon**, 2214, 2215
- Rocks**, have records of many forms of life, 2883  
how animals were shut up in, 47  
how they are melted by rain, 2621  
how they were formed, 404  
how to know, with pictures, 5197  
how to make a collection, 4246  
make up the earth's surface, 2886  
pillars of rock, picture, 405  
take in oxygen, 4545  
that look like men and animals, with pictures, 1058, 1059
- Rock salt**, how it is formed, 1290, 3971  
mine at Northwich, picture, 3971
- Rocky Mountains**, description of the Canadian, 5607  
in Canada, 1244  
peaks of the Canadian, picture, 3636
- Rodents**, animals that gnaw, 668, 2099
- Rodin, Auguste**, figure from statue *Le Penseur*, 5025  
his Citizens of Calais statue, 4169  
work as sculptor, 4162
- Roe, Sir Thomas**, ambassador, 1702
- Roebuck**, numerous in Scotland, 382
- Roger**, names derived from, 4752
- Rogers, John**, died for his faith, 5068
- Rogers, Mrs. Mary**, gave up her life, 320
- Rogers, Samuel**, poems: see Poetry Index  
was a poet banker, 3126
- Roland**, for an Oliver, what it means, 5535  
fought against the Moors, 3354  
hero of The Song of Roland, 2064
- Roland, Marie Jeanne**, guillotined, 4062  
pictures, 4053, 4059
- Rolling hitch**, with picture, 3283
- Rollo**, duke of Normandy, 2065, 3592
- Roman hyacinths**, 1610, 1816
- Roman law**, revised by Justinian, 3152
- Roman numerals**, 1543, 3425
- Romanoffs**, ruled in Russia, 3623
- Romans**, a brave Roman youth, story, 3884  
and Christianity, 2524, 4707  
at war with Carthage, 5262, 5511  
building wall across England, picture, 199  
built splendid bridges, 19  
came to Britain, 194, 196  
chariot race, picture, 5223
- Romans**, cities founded by the Romans, 198  
civil war, 5265, 5266  
coming into England, picture, 195  
conquered the Celts in Switzerland, 2962  
famous makers of Rome, 4945  
grandeur that was Rome, 5259  
history of Rome, 3012, 3018, 4945, 5259  
how they wrote, 3400  
learned basket-making in Britain, 395  
legend of their origin, 5260  
lost their power, 2522; with picture, 2523  
made roads, 158, 270  
navy established, 5262  
ruined house of a governor, picture, 200  
ruled the whole world of their time, 280  
Roman remains discovered in Kent, 200  
settled in the Iberian Peninsula, 3352  
the devotion of a Roman, story, 2630  
the emperors, 527  
the first great men of Rome, 413  
their power in Egypt, 4256, 4792, 5266  
their wars with the Persians, 3876  
took Macedonia and Greece, 5130  
war with the Greeks, 3150, 5262  
war with Parthians, 5065  
wars with the Gauls, 5262  
what they did in sculpture, 4160
- Rome**, became the capital of Italy, 3024  
climb up the Capitol hill, story, 3554  
frugal hero of ancient Rome, story, 2002  
geese who kept guard of the city, 554, 3855  
its history, 4945, 5259  
its monuments, 5005  
stories of Rome, 2301  
taken by the Goths, 5263
- Pictures of Rome**  
burning of Rome, 4951  
chapel decorated with mosaic, 1991  
entered by the Goths, 5263  
the bridge that led to Rome, 1402  
view of the city, 3015
- Rome, King of**, Napoleon's son, 2276
- Romeo and Juliet**, play, and picture, 477
- Romilly, Sir Samuel**, his life, 3697
- Romulus**, founded Rome, 413, 5260
- Romulus and Remus**, possible truth of story, 5478
- Ronalds, Sir Francis**, made a telegraph system, 4314; pictures, 4312, 4317, 4315
- Rontgen, Prof.**, discovered X-rays, 5175
- Rood, Thomas**, printing press, 3572
- Roof camps**, their use, 3198
- Rooke, Admiral**, captured Gibraltar, 1875
- Roofs**, pictures, 1745, 1847
- Room**, the room that is all wrong, with picture, 3175, 3235
- Roosevelt, Theodore**, administration, 3538  
as president, 2418  
picture, 3532  
trip to Africa, 3538
- Roosevelt, the**, Peary's ship, 5211  
picture, 5213
- Root, George F.**, author of *The Battle Cry of Freedom*, 2967
- Root**, of a word, what it is, 4464
- Rope**, how it is made, with pictures, 3991  
why it does not lie straight when thrown, 3862  
why it goes on swinging, 4440
- Rope bridges**, picture, 31
- Roper, Margaret**, love for her father, 1298
- Roraima, Mount**, 4576
- Rosa, Monte**, is a peak in the Alps, 2960
- Rosa, Salvator**, his life, 4956; portrait, 4945  
showing a painting, picture, 4947
- Rosamund**, killed by Queen Eleanor, 2532
- Roscoe, William**: see Poetry Index
- Rose-chaser**, picture in colour, face 3140
- Rosecrans, Gen'l**, at Chickamauga, 2018
- Rose madder**, colour used in painting, 3497
- Rose malden**, story, with picture, 1114
- Rose of Jericho**, a story of, 1677
- Rose-root**, description of, 4834  
picture, 4836
- Roses**, Christmas: see Christmas rose  
culture, 5269  
how to make paper roses, 4140  
how to plant rose-trees, 1817  
how to rid the trees of insects, 3278  
how to treat grafted roses, 1203  
how to treat them, 927, 5269  
making patterns, with picture, 3374



# INDEX

- Roses**, pictures, 5273  
 rose family, 4110  
 story about the rose, 190  
 the thorns are for climbing, 159
- Rosetta Stone**, 4782, 4792, 5100; picture, 5099
- Rosewood**, what it is like, 4998
- Roskilde**, old capital of Denmark, 3598
- Ross, General**, 1399
- Ross, Major Ronald**, and mosquitoes, 3145
- Ross, Sir James**, explorer, 4724, 4730  
 portrait, 4725
- Rosse, Lord**, built a large telescope, 2862
- Rossetti, Christina**: see Poetry Index
- Rossini, Gioacchino**, composer, 3252
- Rotation of crops**, 903
- Rotherwood**, name for Sherwood, 1645
- Rotomahana**, a lake in New Zealand, 1462
- Rotterdam**, in the fourteenth century, 3458  
 its trade, 3462, 3464; picture, 3454  
 port of Holland, 3456
- Rouen**, town, 592, 2396, 2399
- Roumania**, flag, picture in colour, face 1640  
 its history, 3220
- Rounders**, game, 5289
- Roundheads**, Cromwell's men, 1895
- Round Island**, Scilly, picture, 4427
- Round Table**, story of, 870
- Round tag**, game, 574
- Round the World in Eighty Days**, picture, 4868  
 story of the book, 4865
- Round turn and half hitch**, how to make, with picture, 3283
- Rousseau, Jean Jacques**, his character and aims, 211  
 his ideas about government, 4054  
 life, 5221; portraits, 211, 4053
- Rove beetle**, 3263; picture, 3261
- Rowley, Thomas**, a pseudonym of Chatterton, 5319
- Royal Charles**, relic at Amsterdam, 3464
- Royal Exchange**, 4522
- Royal George**, wreck, 4434
- Royalists**, followers of Charles I., 1894
- Royal Standard**, how we got it, 1639
- Rubber**, found in Congo forests, 3076  
 history of, with pictures, 5679  
 is collected in Africa, 4252, 4259, 4262  
 plantation near Belra, picture, 4259  
 trade in South America, 4567, 4574  
 utilisation, and manufactures of, 2669
- Rubens, Peter Paul**, a painter, 758, 4587  
 his picture, A Mother and Child, 763  
 portrait, 759
- Rubicon**, river of Italy, 5266  
 to cross the Rubicon, 420, 5535
- Ruckstuhl, F. W.**, 4850
- Rudolf**, of Hapsburg, and the cup of cold water, 467  
 became Holy Roman emperor, 2852  
 founded the house of Hapsburg, 2527  
 pictures, 2525, 2851  
 waged war in Switzerland, 2964
- Ruff**, a bird, with picture, 1958, 1959
- Ruffed grouse**, picture, 1517
- Rugby school**, picture, 4063
- Ruhr Valley**, has a large coalfield, 2752
- Rumelia**, united with Bulgaria, 3222
- Rum-pel-stilt-skin**, story, and pictures, 553
- Rumsey, James**, steam experiments, 2468
- Runners**, Greek story, with picture, 62
- Running**, why we get out of breath, 1131  
 why we want to run down hills, 4750
- Running stitch**, how to do it, 456
- Runnymede**, Magna Carta signed, 597
- Runt**, a giant pigeon, 2216
- Rupert, Prince**, 1247, 1888, 1895  
 picture, 1896
- Rupert's Land**, included in the Dominion, 4106  
 transferred to Canada, 4104, 5150
- Rurik**, the Viking, with picture, 3624
- Rush, William**, carver of figureheads, 4841
- Rushlight holder**, picture, 1539
- Ruskin, John**, a good and happy girl, an extract, 5436  
 his life and work, 220  
 his opinion of the Colleoni statue, 1256  
 his story, The King of the Golden River, 1433, 1472  
 how he describes an idiot, 5281  
 on wealth, 535  
 on word valuable, 1570
- Ruskin, John**, pictures, 211, 217  
 what he said about the senses, 3867  
 what he said of iron, 1776
- Russell, Clark**, writes sea-stories, 3740
- Russell, Henry**, portrait, 3737  
 wrote songs, 3740
- Russell, Lord John**, introduced bill for union of the Canadas, 4098
- Russia**, adopted the eagle as its arms, 3626  
 as it is to-day, 3745  
 churches, 3748  
 colonies in North America, 2178  
 conquests in Asia, 3880  
 defeated Charles XII., 3596  
 enslavement of peasants, 3628, 3632  
 helped Greece against the Turks, 3220  
 how its power grew, 3158  
 imperial standard, 1640  
 invaded Bulgaria, 3154, 3220  
 invaded by Napoleon, 2276  
 its history, 3624  
 its industries and towns, 3746  
 its people, 3623, 3745  
 its physical features, 3623, 3745  
 population increase, 1644  
 possessions in Central Asia, 3932  
 railways, 3750  
 signed the Treaty of Berlin, 3222  
 struggle for freedom, 3753  
 the making of Russia, 3623  
 took part of Poland, 2578  
 war with England: see Crimean War  
 war with Japan: see Russo-Japanese War  
 went to war with Turkey, 3222
- Pictures of Russia**  
 flag of Russia, in colour, face 1640  
 maps, 3625, 3754  
 peasant types, 3747  
 peasants bringing tribute, 3629  
 Pugachev as Peter III., 3629  
 Russian eagle, 3623  
 Russians fighting the Scythians, 3623
- Russian gossip**, game, 237
- Russo-Japanese War**, 368, 3753
- Rust**, increases weight, 3235  
 what causes it, 1776
- Rustic carpentry**, with picture, 4349
- Rutull**, fought with the Trojans, 72
- Ruyter, Michael de**: see De Ruyter
- Rydal**, where the Stag Waterfall is, 4341
- Ryder, Albert F.**, art of, 4152
- Rye bread**, is eaten in Russia, 1144
- Ryerson, Dr.**, a political leader, 3901
- Ryks Museum**, at Amsterdam, 3464, 4722
- S**
- Sabbath**, in the colonies, 946
- Sabine tribe**, 5260
- Sable**, animal, 140, 3408
- Sabots**, worn by French children, 2399
- Sabra, Princess**, saved by St. George, 960
- Saccharine**, is sweeter than sugar, 4230
- Saccharine syrup**, what it is, 695
- Sack race**, game, 724
- Sacred beetle**, with picture, 3264
- Sacrifice**, of a king's sister, story, 468  
 of the Civil War, story, 2632
- Sacrum**, a bone of the human body, 2442
- Sadowa**, battle of, 2579
- Safe-deposit vault**, description of a, with pictures, 5371
- Safety lamp**, how it works, and picture, 4319  
 invented by Sir Humphry Davy, 1871  
 made by Stevenson, 614
- Safety match**, 773, 776
- Sagas**, Scandinavian writings, 3592
- Sage**, a herb, 3176
- Saguenay**, district of Canada, 3618
- Sahara Desert**, 280, 3072, 4253  
 scene in, picture, 4251
- Sailing ships**, first used, 73
- Sailor**, how he knows his way at sea, 4438  
 how he ties his knots, 235  
 puzzle of the laughing sailor, with picture, 2568, 2694
- Saint, Thomas**, made sewing machine, 1621
- Saint**, stories of the saints, 1007  
 why saints are drawn with halos, 5650
- St. Albans Cathedral**, picture, 482
- St. Angelo**, fortress of, 3020

# INDEX

- St. Augustine**, and Christianity, 5524  
**St. Augustine, Fla.**, attacked, 524  
 founded, 262  
 picture, 5612  
**St. Bartholomew's Day**, massacre, 2070  
 picture, 2071  
**St. Basil Cathedral**, and picture, 3749  
**St. Bernard dog**, 500; picture, 498  
**St. Bernard Pass**, Roman road over, 2962  
**St. Croix River**, discovered, 369  
**Sainte-Chapelle**, description, with pictures, 5332  
**St. Etienne**, coalfield, 2396  
**St. Gall**, monastery, 2964, 2968  
**St. Gallen**, has old manuscripts, 2964  
**Saint Gaudens**, *Augustus*, sculpture of, with pictures, 4841, 4846, 4847  
**St. Gotthard, Mount**, railway tunnel through, 2968  
 where it is, 2960  
**St. Helena**, Napoleon's prison, 1876, 2277  
**St. Heller**, the man who saved St. Heller, story, with picture, 1063  
**St. Isaac's Cathedral**, St. Petersburg, 3746  
**St. John, W. B.**, description, 5604  
 picture, 5605  
**St. John Lateran**, in Rome, 4950  
**St. John River**, discovered, 3619  
**St. John's-wort**, family of plants, what it is like, 4111  
**St. Just, Louis de**, portrait, 4053  
**St. Keyne's Well**, legend, 4277  
**St. Kitts**, exports sugar, 1877  
**St. Lawrence River**, description, 526, 1240  
 discovered, 3618  
 picture, 28  
 rapids of, 526  
**St. Leonards**, the dragon of, 3648  
**St. Louis, Mo.**, World's Fair in, 3538  
**St. Lucia**, has a fine harbour, 1878  
**St. Mark's Cathedral**, Venice, 618, 1990  
 how it was built, 1250, 1252  
 pictures, 619, 1251  
 story of the bronze horses, 3016, 5005  
**St. Paul's Cathedral**, London, picture of the building, 1161  
 story of how it was built, 1160  
 the echo, 3976, 4584  
**St. Paul's Church**, in New York, 4308  
**St. Peter and St. Paul Cathedral**, 3748  
**St. Peter and St. Paul Fortress**, St. Petersburg, picture, 3745  
**St. Petersburg**, city, 3630, 3746  
 Nevski Prospect, picture, 3749  
**St. Peter's Cathedral**, Rome, picture, 3019  
 Raphael drew plans, 758  
 the building of, 4948, 4950, 4952  
 the largest in the world, 3018  
**St. Pierre**, destroyed by volcano, 1878  
**St. Ronan's Well**, story, 1496  
**St. Sophia Cathedral**, Constantinople, 3152, 3156;  
 picture, 3151  
**St. Vincent, Cape**, battle of, 3358, 4358  
**St. Vincent, John Jervis**, Earl of, 4358  
**St. Vincent's rocks**, legend, 3208  
**Saker**, a falcon, 1946  
**Sakhalin**, island, 363  
**Saladin**, Sultan, and Egypt, 4256  
 in the Crusades, 1589, 2704, 3878  
 picture, 1592  
**Salamanca**, battle of, 4364  
**Salamander**, and picture, 1223, 1228  
**Salamis**, battle of, 1302, 5064, 5127, 5129  
**Salem**, town in Massachusetts, 1470  
**Salisbury, Robert Cecil**, Earl of, statesman of James I., 1792, 2380  
**Salisbury, Robert Cecil, Marquis of**, 2380  
**Salisbury Cathedral**, picture, 4593  
**Saliva**, how it helps digestion, 2205, 2345  
**Sallow**, willow, picture, 3191  
**Sallow-thorn**: see Blackthorn  
**Salmon**, fish, its life-story, 2676  
 loading salmon, pictures, 1243, 2679  
 salmon-leap, pictures, 2675, 2677  
**Salmon trout**, and picture, 2679, 2680  
**Salomon**, picture of Gustavus Vasa, 3593  
**Salt**, city of salt in Poland, 2858  
 how animals require salt, 3215  
 how prepared for use, with pictures, 224  
 how the stomach uses it, 2344  
 in Canada, 5600  
**Salt**, necessity in food, 2698  
 pictures, 222, 223, 224, 2324  
 production of in U. S., 2661  
 sugar and salt, story, 5083  
 the salt of the earth, 223  
 various kinds in the sea, 1270  
 what it is, 1291, 1797, 1800  
 where it is found, 3971  
 where salt of sea comes from, 407  
 why it is damp before rain, 3760  
 why it makes us thirsty, 1271  
 why it melts snow, 3864  
 why sun does not draw salt from sea, 3093  
**Salt Lake City**, founded, 1834  
**Saltwort**, black: see Milkwort, sea  
 description, 5185  
 picture, 5192  
**Salvador**, flag, picture in colour, 1640  
 republic, 4392  
**Salzburg**, town, 2854; with picture, 2857  
**Samaria**, taken by Assyrians, 4978  
**Samarkand**, dervish, picture, 3939  
 where it is, and picture, 3935  
**Sarmites**, war with Romans, 2002, 5263  
**Samoa**, Germany in, 2756  
 history and description, 2190  
**Samphire**, marsh: see Glasswort  
 plant, 4112  
 rock, picture, 5184  
**Sampler**, how to make, with pictures, 5529  
**Sampson**, Commodore W. T., fleet at Santiago, 2188  
**Samurai**, Japanese retainer, 365  
**Sand**, desert in Central Asia, 108  
 grains, through microscope, picture, 2325  
 how it is made, 407, 1410  
 how to build castles, with pictures, 4025  
 on the seashore, 5381  
 sand-builders of the beach, picture, 1415  
 why the sun makes sands steam, 3094  
 wonder of a world of sand, pictures, 4122  
**Sand-box**, plant, seeds, picture, 3732  
**San Francisco**, bay discovered, 267  
**Sandhopper**, and picture, 2587, 2589  
**San Domingo**: see Hayti  
**Sand-lizard**, and picture, 1226  
**Sand-martin**, and picture, 2211, 2212  
**Sandor**, Count, an eccentric horseman, 5694  
**Sandor Album**, sketches of Count Sandor's feats, 5694  
**Sand-piper**, bird, 1958  
**Sand-screw**, sea animal, 2587  
**Sand-star**, sea animal, 2342  
**Sandstone**, 915, 2886, 3036, 5197  
**Sand-viper**, a relative of the viper, 1380  
**Sandwiches**, how to make, 3284, 3285  
**San Giovanni**, church in Florence, its gates, 2782; picture, 2783  
**Sangster, Margaret B.**: see Poetry Index  
**Sanicie**, plant, 3951  
**Sankey, Ira**, work, 1998; picture, 1999  
**San Martin**, José de, patriot, 4506  
**Sanmichele, Michele**, architect, 1252  
**Sansovino, Jacopo**, his life, 1252  
**Sant, J.**, picture of Whittington, 327  
**Santa Anna, Gen.**, at Buena Vista, 1832  
 captured, 1832  
 his death, 4392  
 president of Mexico, 4388  
**Santa Claus**, the real Santa Claus, 1013  
 true story of Father Christmas, with pictures in colour, 2146, 2155  
**Santa Cruz**, founded, 4505; pictures, 1465  
**Santa Fé**, founded, 262  
**Santa Maria**, ship, picture, 56  
**Santa Maria Novella**, Florence, its beautiful walls, picture, 2785  
**Santangel**, statesman of Spain, 2367  
**Santiago**, in Chile, 4569; picture, 4573  
**Santiago, Cuba**, battle of fleets at, 2188  
**Santos**, a port of Brazil, 4568  
**Saône**, river, in France, 2394  
**Sapor I.**, king of Persia, 5066  
**Sapor II.**, king of Persia, 5066  
**Saraceni**: see Arabs and Moors  
**Saragossa**, maid of, story, and picture, 4645  
 town in Spain, 3352, 3353  
**Saratoga**, battles of, 988  
**Sarawak**, flag, picture in colour, face 1640  
**Sardine**, and picture, 206, 206  
**Sardinia**, 3012, 3020

# INDEX

- Sargent, John Singer**, art of, 4151; picture, 4157
- Sargon**, king of Assyria, 4978
- Sarracenia**, plant, and picture, 3541
- Sarts**, people of Asia, picture, 3939
- Sarus crane**, 1958
- Saskatchewan**, description, 5368  
in Canada, 1242, 1244, 1248  
organised, 4105  
province formed, 4106
- Saskatoon**, growing rapidly, 5366
- Sassafras**, picture, 5443
- Sassanian Empire**, 5066
- Satellite**, its meaning, 2219, 3032
- Satin bower bird**, with picture, 665, 1742
- Satin stitch**, with picture, 1507
- Satisfaction**, the benefit of not being satisfied, 5170
- Saturday**, meaning of name, 87, 4533
- Saturn**, god, 87, 4533; picture, 87
- Saturn**, planet, has tides, 2280  
its moons, 150, 2080, 3032, 4345  
probably has no life, 2080  
what is known about it, 2428
- Satiba ant**, how it lives and works, 2944
- Saunter, Madeleine**, story of her life, 1054
- Saurez, Don Mendo Quroga y**, in Mexican legend, 5231
- Savannah**, steamboat, 2472; picture, 2473
- Savannah, Georgia**, captured, 2020  
founded, 524
- Save River**, of Hungary, 2860, 3222
- Savonarola**, bonfire of vanities, picture, 3980  
his life, 3988; portrait, 3981
- Saw**, how to use a saw, with picture, 337, 338  
the kind of a saw to buy, 337
- Saw-fish**, 1086, 2675; picture, 1085
- Saxifrage**, different kinds, 2042  
mossy, picture, 4835  
pictures, 2042  
the saxifrage family, 4112  
yellow mountain, 4834; picture, 4835
- Saxons**, came to England, 427
- Saxony**, state in Germany, 2578, 2752
- Scabious**, field, 4417; with picture, 4416  
flower, its family, 4112
- Scald**, how to treat, 5110
- Scals insect**, eaten by the ladybird, 3260
- Scales** and the globe, picture, 3551
- Scales**, in music: see Music
- Scanderbag**, won freedom for Albania, 122
- Scandinavia**: see Norway and Sweden
- Scandinavian Alps**, where they are, 3591
- Scandinavians** their history, 430, 3592
- Scar**, on body, not true skin, 1962
- Scarabeus**, beetle, with picture, 3264
- Scarborough**, story of, 1320
- Scarf**, how to make, with picture, 1348
- Scarlet runner bean**, how to preserve, 4353
- Scarlet tiger moth**, pictures in colour, face 2982, face 3140
- Scaw Fell**, mountain, picture, 5017
- Sceptre**, origin of, 5650
- Schadhausen**, has wonderful falls, 2960
- Schamy**, his life, and picture, 2952
- Schelde River**, in Belgium, 3455
- Schenectady**, burning of, 890
- Schiller, Johann C. F.**, life, 5222; portrait, 5217  
statue in Berlin, 2748
- Schleswig**, province, 3596
- Schley, Commodore**, at Santiago, 2188
- Schliemann, Dr.**, his discovery, 5004
- Schlossburg**, town in Russia, 3630
- Schmitt, Aloys**, story of his life, 4038
- Schoeffer, Peter**, metal-worker, 3569
- Schofield, Gen'l**, and Hood's army, 2020
- Schoolgirl**, of Dorset, story, 4831
- Schoolmistress**, a game, 2573
- Schools**, Confucius in Chinese, 5580  
in New York, 3193  
in the colonies, 942  
the Academy of Plato, 5510
- Schooner**, with picture, 3914
- Schubert, Franz**, life, 3249; portrait, 3243
- Schuckburg, Dr.**, and "Yankee Doodle," 2955
- Schumann, Robert**, his life, 3250  
on practising, 3786  
portrait, 3243
- Schuyler, Philip**, at Cambridge, 984  
at Saratoga, 988  
picture, 985
- Schwartzburg, Catherina**, Countess of, her heroism, and picture, 3883
- Schwyz**, Swiss canton, 2964
- Science**, famous men of, 851  
heroes of, 3200
- Scipio, Emilianus**, Roman general, 5264
- Scipio, Cornelius**, called Africanus, 416
- Scissors**, how they are made, pictures, 4741
- Scopas**, a great sculptor, 4160
- Scorpion**, and pictures, 3301, 3304
- Scotch argus**, butterfly, 2992
- Scotch rose**, 1817
- Scotland**, Charles and the Covenant, 1888  
Edward I. claimed the crown, 748  
how the people's food is changing, 2926  
invaded by Northmen, 434  
kings and queens of Scotland, 3079  
religious persecution, 5067  
saved by thistle, 4424  
story of the Scottish flag, 2333  
united with England, 1029  
why it is so rainy, 3094
- Scots pine**, pictures, 3441
- Scott, Captain**, South Pole expedition, 4730;  
with portrait, 4725
- Scott, Sir Gilbert**, Albert memorial, 5004
- Scott, Sir Walter**, disbelief in gas, 657  
monument in Edinburgh, picture, 5013  
pictures, 2307, 2308, 2309, 3902  
poems: see Poetry Index  
the story of his life, 2307  
Waverley Novels, 1493, 1599, 1645, 1757  
what he said about planting trees, 3077  
where he got the story of The Heart of Midlothian, 2204
- Scott, Winfield**, in Canada, 1399, 3901  
in Mexico, with picture, 1832
- Scouts**: see Boy Scouts
- Scramblepipe**, adventures, with pictures in colour, 2143, 3644, 3849
- Screen**, how to make, with picture, 2871
- Screwdriver**, its use, with picture, 338
- Scully**, heroism in Indian Mutiny, 1913
- Sculpture**, a little talk on sculpture, 4159  
American sculptors, with pictures, 4841  
good and bad work, 5005  
Indian, a picture, 16  
talk about monuments, 5003
- Scurvy-grass**, picture, 4838
- Scutari**, in Constantinople, 3226, 3874
- Scutari, Lake**, 3224, 3882
- Scylla**, a famous rock, 70, 4743
- Seythians**, 3623, 4982
- Sea**, blue light seen at night, 3694  
conquerors of the sea, 2467  
gets larger in some places, 1270  
gold and radium found in, 2619  
held in place by the earth's gravitation, 5687  
how a current is made, 1056  
how it affects climate, 4323  
how it became dry land, 47  
how life came out of the sea, 359  
how much water there is, 2620  
how we tell what is at bottom, 3755  
its depth, 5167  
smaller fishes of the sea, 201  
tides: see Tides  
was at one time very hot, 167  
when it is warmest, 4324  
why it does not freeze, 4546  
why it is never still, 1055  
why it is not too full, 406  
why it is salt, 1270  
why it roars, 4545  
why its colour changes, 1864  
why moon's reflection follows us, 2672  
why the water does not sink into the ground, 3430
- Pictures of the Sea**
- how it moves, 35  
sea scenes, 1412  
some wonderful growths in the sea, through the microscope, 2339  
strange forms of life below the sea, 2334  
view of sea and rocks, 36  
washing away the shore, 404, 4431
- Sea-anemone**, its life-story, 1411, 2338  
pictures, 1417, face 2335 in colour, 2337  
where to find it, 4454
- Sea-animals**, colony of, picture, 2334

# INDEX

- Sea-bear**, seal that has fur, 1090  
**Sea Breeze Home**, its work, 3196  
**Sea-cucumber**, an animal, 2342  
 pictures, 1417, face 2335 in colour  
**Sea-devil**, the angler-fish, 207  
**Sea-eagle**, American bald, 1839; picture, 1838  
**Sea-eel**, 2451; picture, 2449  
**Sea-egg**, the sea-urchin, 2342  
**Sea-elephant**, and picture, 1089, 1090  
**Sea-flowers**, picture in colour, face 2334  
**Sea-hedgehog**, pictures, 1416, 1417  
**Sea-horse**, and picture, 209, 210  
**Seal**, education of, 5480  
 intelligent behaviour of, 5328  
 its life-story, 1090  
 pictures, 1089, 2731  
**Sea-lavender**, 1509, 5190; picture, 5184  
**Sealing-wax**, 617, 2135  
**Sea-lion**, 1091; pictures, 51, 1089  
**Sealskin**, how it is obtained, 1090  
**Sea-lyme grass**, picture, 1336  
**Sea-milkwort**, picture, 5191  
**Sea-nettle**, jelly-fish, 2341; picture, 2334  
**Sea-otter**, picture, 2729  
**Sea-pen**, formed of animals, picture, 2334  
**Sea-pink**, 2042, 4838  
**Sea-pudding**, the sea-cucumber, 2342  
**Search for the princess**, story, 324  
**Sea-reed**, 1334; picture, 1334  
**Sea-scorpions**, used to live, 46  
**Sea-serpent**, 49, 2452  
**Seashore walk**, with pictures, 1409, 1418  
**Sea-sickness**, how it may be caused, 2454  
**Sea-slug**, pictures, 2334, 2337  
**Sea-snake**, banded, picture, 1379  
**Seasons**, the cause of, 411, 3032  
 the wonder of, with picture, 1120  
**Sea-swallow**, the tern, 1630  
**Sea-trout**, the salmon trout, 2680  
**Sea-unicorn**, the narwhal, 1088  
**Sea-urchin**, has a tough, limy skin, 2342  
 pictures, 1416, 1417, face 2334 in colour  
**Sea-urchin cactus**, picture, 3975  
**Sea-wall**, made of concrete, picture, 4432  
**Sea-water**, how to get it, 4454  
 its specific gravity, 316, 3817  
**Seaweed**, first plants like seaweed, 169  
 how it tells the weather, 3922, 5166  
 how to make a collection, 4877  
 its use, 4877  
 pictures, 169, 1411, 4876, 4877  
 the air in seaweed, 5016  
**Sebastopol**, 1098, 3631, 3632  
**Sebert, King**, built a church, 4635  
**Second**, unit of time, 3670  
**Secondary colours**, what they are, 2654  
**Second Estate**, in France, 2268  
**Secretary bird**, its life-story, 1844; with picture, 1841  
**Secret lock**, puzzle, with picture, 2766, 2872  
**Secret writing**, 4137  
**Sedan**, battle of, 2277, 2580  
**Sedge-warbler**, 2057; picture, 2053  
**Sedimentary rocks**, what they are, 3036  
**Sedum**, 2042, 5271; pictures, 2042, 5277  
**See**, district ruled by a bishop, 4707  
**Seedlings**, how to treat, 719, 1816, 3616  
**Seeds**, come up at different times, 1134  
 growth after hundreds of years, 1778  
 how plants are formed, 1134  
 how the colours of a plant are made, 4442  
 how they are carried by birds, 2210  
 how they are sown, with picture, 4083  
 how they are spread, with picture, 3733  
 how they breathe, 912  
 how they grow, with picture, 3732  
 how to preserve for sowing, 1203  
 how to sow them, 233, 2971  
 life-story of a seed, 3734  
 plant in seed, 2077  
 sprout when watered, 1776  
 that may be sown in August, 1350  
 travel long distances, picture, 3833  
**See-saw**, how it balances, 3673  
 how to make a, 5657  
**Sefton, Mount**, with picture, 1461  
**Seine**, river in France, 2394  
**Sejanus**, plotted to murder Tiberius, 528  
**Seleucia**, capital of the Seleucidæ, 5065  
**Seleucus**, king of Persia, 5065  
**Self-binders**, at work, picture, 4085  
**Self-consciousness**, what it is, 5131  
**Self-control**, raises us above animals, 244  
**Selkirk, Alexander**, real Crusoe, 354, 1231  
**Selkirks**, mountains of Canada, 5607  
**Selvas**, forests of South America, 4567  
**Selwyn, G. A.**, life, 3488; picture, 3483  
**Semaphore signalling**, with pictures, 3722, 3724  
 used in coastguard work, picture, 4430  
**Semitic tribes**, conquered Sumerians, 4974  
**Semolina**, a preparation of wheat, 2925  
**Sempach**, battle of, 122, 2966  
**Seneca**, the tutor of Nero, 530  
**Sennacherib**, history on cylinders, 4978  
 how his army was destroyed, 4980  
**Sensation**, associated sensations, 4823  
**Senses**, how our senses are linked, 3719  
 how our senses make our minds, 4731  
 skin as an organ of sense, 1964  
 the different senses, 3868  
 what contact senses are, 3861  
 what use they are, 1  
**Sensitiveness**, its value, 3867  
**Sensitive plant**, 3539, 4118; picture, 2796  
**Sentinel**, how his life was saved, 1536  
**Sepals**, of a flower, 4110; picture, 3736  
**Sepia**, colour used in painting, 2452, 3497  
**Sepoys**, mutinied against the British, 1706, 1913  
 native Indian soldiers, 1098  
**September**, how it got its name, 4521, 4533  
 symbolic scene, picture, 4519  
**Serapis**, temple of, with picture, 3003  
**Serapis, the**, and the Bon Homme Richard, 2898  
**Serbs**, settled in Serbia, 3150  
**Seris**, in France, 2066  
 in Russia, 3628, 3632  
**Seriema**, bird, with picture, 1956, 1957  
**Seringapatam**, the wreck of, 4178  
**Serpent, The**, game, and picture, 5106  
**Serpentine**, rock, 4246, 5198  
**Servant**, who saved his own mistress, 1734  
**Servetus**, his discovery, 1579  
**Servia**, compact against Basil II., 3154  
 conquered by Mohammed II., 3156  
 flag, picture in colour, face 1640  
 its history, 3222  
 women in national dress, picture, 3225  
**Service-berry**: see Shadbush  
**Service-tree**, with picture, 3447  
**Serviette-holder**, made from curtain-rings,  
 with picture, 3172  
**Sesame**, power of, 5501  
**Sesame and Lilies**, extract from book, 5501  
**Seti I.**, built a pylon, 5007  
**Seton Indians**: see Boy Scouts  
**Setterwort**, 4289  
**Seoul**, capital of Korea, 368  
**Seven Days' War**, 2866  
**Seven Fines**, battle of, 2016  
**Seven Sisters**, waterfall in Norway, 3599  
**Seven Years' War**, 2530  
**Severus**, Arch of, imitated, 5005  
**Seville**, a beautiful city, 3356, 3361  
 dates from Roman times, 3352  
 grows bitter oranges, 643  
**Sèvres**, noted for china, 2396  
**Seward, William H.**, plot to kill, 2022  
**Sewing**, afternoon tea-cloth, 5449  
 braid lace collar, 5352  
 little picture on canvas, 5529  
 pretty needlework bag, 5665  
**See also Embroidery**  
**Sewing-machine**, manufacture of, 1621  
**Sewing stitch**, how to do, with picture, 836  
**Sextus**, son of Tarquin, 413  
 warred against Rome, 1403  
**Shackleton**, Lieutenant, South Pole expedition,  
 4438, 4730; with portrait, 4725  
**Shadbush**, description, 5626; picture, 5623  
**Shade**, for a candle, with picture, 100  
**Shadows**, and reflections, 5524  
 Brocken spectre, with picture, 1724  
 earth's shadow on the moon, 1862  
 how they are made, 1724, 3434  
 shadows on wall, with picture, 5201  
 show the height of objects, 2223  
 vary according to sun, 3092, 4597  
**Shaft**, of a coal-mine, 800  
**Shaftesbury, Seventh Earl of**, his work as a  
 reformer, 3704

# INDEX

- Shaftesbury, Seventh Earl of**, pictures, 3697, 3705  
statue, 1100
- Shagreen**, skin of the shark, 2446
- Shahab-ud-Din**, Indian emperor, 2912
- Shahab**, an Indian falcon, 1846
- Shah Jehan**, built the Taj Mahal, 1550, 1702;  
portrait, 1699
- Shakespeare, William**, his life-story, 3330  
his plays, 313, 473  
how many words he used, 2330  
how to make a model of his birthplace, with  
pictures, 335, 336  
lived in Elizabeth's reign, 846, 2535  
poems: see Poetry Index  
portrait bust of, 4848  
scenes from plays, pictures, 312  
scenes in his life, pictures, 3327, 3333  
the boy Shakespeare in the Forest of Arden,  
with picture, 5652  
the soliloquy of Henry V., 5360  
what he called the Bermudas, 1878  
what he said of gold, 1571  
wise sayings from his plays, 2921
- See also Names of Plays**
- Shalmaneser II.**, king of Assyria, 4977
- Shamrock**, the four-leaved, story, 1110
- Shanghai**, town, and picture, 113, 115
- Shannon**, the, and Chesapeake, 1399, 2902
- Shantung Mountains**, in east China, 106
- Shark**, can live in fresh water, 2675  
different kinds, with pictures, 51, 2443, 2444, 2445  
how it is accompanied by other fish, 207  
one of the early animals, 48
- Shark moth**, picture, 3413
- Sharp, Granville**, work against slavery, and  
portrait, 4646
- Sharp, James**, archbishop, murder of, 1760
- Sharpsburg** (also called Antietam), battle of,  
2018
- Shawl**, how to crochet, and pictures, 5107  
why the fine shawls come from Shetland,  
with pictures, 5419
- Shaw Memorial**, sculptured relief of, 4848
- Shays' Rebellion**, in Massachusetts, 1389
- Shear-water**, bird, 1626
- Sheath-bill**, 1626; picture, 1687
- Sheep**, different kinds, 378  
how long they live, 2328  
how the word is derived, 5234  
pictures, 51, 377, 378, 1243  
play of young, 5481  
reared in Australia, 1358  
why they have wool, 3236
- Sheep-bat**, with picture, 3257, 3263
- Sheep-dog**, picture, 503
- Sheep's fescue grass**, picture, 2978
- Sheepshank knot**, with picture, 236
- Sheet bend knot**, picture, 235
- Shelfield**, meaning of name, 5388
- Sheldrake**, duck, picture, 1519
- Shellac varnish**, 2256
- Shelley, Percy Bysshe**, poet, his life, 3910  
poems: see Poetry Index  
portrait, 3907  
portrait bust of, 4848
- Shell-fish**, not true fish, 661, 4826  
roof of mouth magnified, picture, 2326
- Shells**, how to make a collection, 4770  
pictures, 3755, 3759  
sounds which they pick up, 909  
where they come from, 3755
- Shenstone, William**: see Poetry Index
- Shepherd**, greedy shepherd, story, and pictures,  
1046  
shepherd maid and the sweep, story, with pic-  
ture, 4633  
takes care of sheep, 1929
- Shepherdess**, of the moors, story, 2035
- Sheridan, Philip H.**, in the Shenandoah Valley,  
2020  
picture, 2017
- Sherman, Roger**, portrait, 987
- Sherman, William Tecumseh**, and army in the  
West, 2018  
March to the Sea, with picture, 2020  
picture, 2017  
statue of, 4848; with picture, 5182
- Sherry**, how it got its name, 4532
- Sherrwood Forest**, 2601
- Shetland Islands**, story of the shawls of, 5419
- Shetland Islands**, the silkie wife, story, 556
- Shetland pony**, 272; picture, 270
- Shiloh**, battle of, 2013
- Shin-bone**, jointed to thigh-bone, 2546
- Shingle**, made by water, 407  
on the south coast of England, 3035
- Shintoism**, religion of Japan, 364
- Shinto temple** in Japan, picture, 371
- Ship constellation**, nebula, picture, 2963
- Shipka**, battle of, 3222
- Ships**, American liners, their great size, 72  
coffin ships, 1574  
effect of ballast, 3838  
guarded from the teredo, 2588  
how a ship comes into sight, 5  
how to understand different parts, 4564  
many dangers for, 737  
picture of the largest ship, 5476  
submarine, 5585  
why an iron vessel floats, 685  
wonder of ship sailing at night, 73
- Pictures of ships**
- full-rigged ship, 3915  
how a ship would look in a street, 74  
inside of Cunard ship, 73  
principal parts of a ship, 4564  
ship at sea in moonlight, 73  
ship on the water, 2951  
what it is like on board, 75
- See also Battles (naval)**
- Shipton, Mother**, story, with picture, 2096
- Shipwrecked sailor**, the oldest story, 67
- Shiré River**, tributary of Zambesi, 4254
- Shireen**, wife of Chosroes II., 3876
- Shires**, their formation, 428
- Shirlaw, Walter**, an artist, 4152
- Shirpuria**, city of Mesopotamia, 4974
- Shivering**, why we shiver when cold, 2232
- Shock**, why it makes people jump, 2878
- Shoemakers**, wonderful procession of, a pic-  
ture, 5343
- Shoes**, machine for sewing, 2670
- Shogun**, Japanese ruler, 365
- Shooting at a target**, picture, 4545
- Shooting stars**, 145, 152, 1128, 1863  
picture, 145
- Shop-window**, tale of a, 5691
- Shore**, the little man by the secret shore,  
story, and picture, 4928
- Shore crab**, 2584
- Short-billed turbit pigeon**, picture, 2213
- Short History of the English People**, extract  
from, 5502
- Short sight**, what it is, 4295
- Shoulder-blade**, how it is made, 2544
- Shovel, Sir Cloudestley**, story of, 4070
- Shovel**, steam, pictures, 5633, 5634
- Showy lily**, 5272
- Shrew**, animal, 674; with picture, 673  
dwelling, 5413
- Shrewsbury**, meaning of name, 5388
- Shrike**, a bird of prey, 1848
- Shrimp**, food for the sea-anemone, 1411  
hides during the day, 2587; picture, 2585
- Shrimp Girl**, by Hogarth, picture, 763
- Shropshire**, meaning of name, 5388
- Shrubs**, American, with pictures, 4487
- Shumer, Land of**, a name for Chaldæa, 4974
- Shuttlecock and battledore**, game, 3516
- Siam**, flag, picture in colour, 1640
- Siberia**, conquered by a Cossack, 3628  
exiles recalled by Peter III., 3630  
farming in, 3598  
flag, picture in colour, 1640  
was perhaps once a sea, 3940  
where prisoners are sent, 3746
- Siberian railway**, 3752
- Siberian squill**, flower, 5272
- Sicily**, added to German states, 2527  
belongs to Italy, 3012  
how its progress was hindered, 3020  
made a Roman province, 5264  
may become joined to Italy, 2888  
Sicilian cart, picture, 3022  
very liable to earthquakes, 3229
- Sidney, Colonel**, story of his son, and picture,  
4806
- Sidney, Sir Philip**, fought in the Low Coun-  
tries, 3462

# INDEX

- Sidney, Sir Philip**, how he gave the cup of cold water, 467; with picture, 466  
lived in Elizabeth's reign, 2535  
poems: see Poetry Index  
was a friend of Spenser, 3329
- Sierra Morena Mountains**, 3352
- Sierra Nevada Mountains**, 3352
- Sight**, always an error in our sight, 104  
can a blind man's touch take the place of his sight? 5486  
can we think about people without seeing them in our minds? 5486  
controlled by the brain, 3543  
do we always see everything the moment it happens? 5640  
how far we can see, 3539  
how it is governed by brain, 3778  
how it varies, 4602  
how man's sight has developed, 3719  
how we see spots, 3035  
how we see things, 3861  
influenced by memory, 1642  
pictures printed on the eyes, 4548  
seeing colours, 3035, 3758, 4507  
seeing small things, 2874, 4828  
sight from a height, 2332, 3438  
the different kinds of sight, 4295  
trick of, 5668  
we cannot see everything, 510  
we do not see a thing at once, 3380  
we see only one thing when we look at it.  
    with both eyes, 3543  
    why a star is seen star-shaped, 2879  
    why we cannot see in the dark, 153  
    why we do not see things upside down, 39  
    why we see a black spot after looking at the sun, 42  
    why we see so much at once, 1642
- Sigismund, Emperor**, 2854, 3154
- Signboards** and the wind, a story, 5342
- Signs**, how to speak by, and picture, 3722
- Sigourney, Mrs.**: see Poetry Index
- Sikhs**, are fine soldiers, 1099  
rose against the British, 1706  
the noble Sikh, story, 2548
- Si-kiang**, river in China, 108
- Silchester**, buried city found, 5100
- Silenus**, companion of Bacchus, 556
- Silesia**, province, 2530, 2752, 2858
- Silhouettes**, making of, with pictures, 5521
- Silicon**, what it is, 4821
- Silk**, French weavers settled in England, 1028  
how it is prepared, 1810  
production of, 2664  
the wonder of a piece of silk, 1805  
threads through microscope, picture, 2325  
where it is made, 2396
- Silkie wife** in Shetland Isles, story, 556
- Silkworm**, disease among silkworms, 1812  
its life-story, 1805  
pictures, 1805, 1809, 1811
- Silkworm moth**, 1812, 2983; picture, 1805
- Sill, Edward Rowland**: see Poetry Index
- Sillman, Dr.**, tested kerosene, 4131
- Silver**, cannot be changed, 838  
German silver: see German silver  
in Canada, 5699  
production of, in U. S., 2860  
what makes it tarnish, 1776  
why gold is more valuable, 1570  
why it is called a noble metal, 1293
- Silver fox**, with picture, 2729
- Silver pheasant**, 1515; picture, 1516
- Silverweed**, 4110
- Simcoe, John Graves**, as governor, 4106
- Simla**, a city in India, 1548
- Simmerdale Water**, legend, 465
- Simon**, names derived from, 4752
- Simon says**, a game, 2137
- Simon's Bay**, 1802
- Simplicius**, died for his religion, 964
- Simplon Pass**, road made by Napoleon, 2967
- Simplon Tunnel**, its length, 2968
- Simpson, Sir George**, head of the Hudson's Bay Co., 6150
- Simpson, Sir James Young**, his life, 4201  
pictures, 4195, 4199
- Sinbad the Sailor**, how the story may have arisen, 67  
story, with picture, 810
- Sinew**, a tendon, 2625
- Singapore**, obtained from Dutch, 1879
- Singer, Isaac**, improved sewing-machine, 1624
- Singer Building**, in New York City, a picture, 2663
- Singers**, five singers, picture, 2149
- Singh**, in story of the hundred thousand monkeys, 5655
- Singhalese**, related to the Chinese, 1880
- Singing**, a kind of expiration, 1638  
how a good singer uses his voice, 4916  
how we sing, 3958  
talking and singing, 4073
- Singular number**, pictures, 767
- Siren**, how it works, picture, 4859  
its sound, 4760  
the many-voiced siren, 4859
- Sirenia**, the manatee and dugong, 1088
- Sirens**, beautiful singing maidens, 70
- Sirius**, legend of Sirius, 3313  
star, 1860, 2088, 2614
- Sirus**, steamer, 2472
- Sisal hemp**, picture, 3991
- Sister**, the undying love of a, story, 964
- Sisters of Charity**, 3010
- Sistine Chapel**, 4948, 4950, 4952  
pictures, 4949
- Sisyphus**, of Corinth, his punishment, 4518  
married Merope, 3314
- Sivatherium**, horned animal, picture, 44
- Six Nations**, in French and Indian War, 885  
why so-called, 523
- Sixpence**, the disappearing sixpence, trick, with picture, 1347
- Sixpenny telegrams**, a game, 2573
- Six-plumed bird of paradise**, 1738
- Sixtus IV.**, pope, 4948
- Size**, the size and weight of things, 3813  
why dark things look small, 3382
- Skate**, fish, 2448; pictures, 1410, 2449
- Skating**, in Canada, 5209
- Skeleton**, picture, 2439  
what it is, 2437, 4824  
why we have a skeleton, 3546
- Skiddaw**, mountain, picture, 5017
- Ski-ing**, in Canada, 5210  
with picture, 5213
- Skimmer**, bird, 1630
- Skin**, a cut greatly magnified, picture, 1909  
as a unit of measure, 5150  
can absorb oil, 1963  
for breathing, in lower animals, 1963  
produces hair and nails, 1961  
the organ of some of the senses, 1964  
the skin and its uses, 1583, 1909  
why it becomes brown in the sun, 3760  
why moisture can penetrate it, 4121
- Skink**, African lizard, 1219; picture, 1227
- Skua**, life-story, with picture, 1626, 1627
- Skull**, contains the brain, 2438  
how it has grown in man, 2541  
pictures, 2441, 2541, 2544
- Skull-cap**, plant, 4970; picture, 4968
- Sky**, looks like a dome, 2610  
what it is, and its distance, 3381, 4437  
why is Italy's sky bluer than ours, 5384  
why it is blue, 426  
why it is dull before a storm, 1987
- Sky-dust**, what it is, 2501, 4050
- Skylark**: see Lark
- Sky-perspective**, and stereoscope, 2610
- Slaked lime**, what it is, 1799, 1800, 4339
- Slanion**, salt mine, picture, 222
- Slate**, in Canada, 5600
- Slate and pencil games**, and pictures, 5113
- Slavery**, Abolitionist party formed, 2008  
Compromise of 1850, 2008  
Dred Scott Decision, 2009  
Dunstan protected slaves, 4709  
famous slaves, 2909  
Fugitive Slave Law, 2008, 3536  
has been done away with, 1099  
in America, 516, 1825  
in South America, 4506  
in the West Indies, 1878  
John Brown's raid, 2008, 3536  
opinions regarding, 2008  
pictures, 4711, 2909, 3009  
Republican party formed to fight, 2009  
Sir Samuel Baker's work, 4445  
slave who saved his master, story, 1914  
the Austrians were made slaves, 2528



# INDEX

**Slavery**, the friend of slaves, story, 3009  
the slave trade in Africa, 4252  
Thirteenth Amendment passed, 2022  
Thoreau's work for abolition, 1484  
Whittier's work for its abolition, 1482

See also Civil War; Negroes

**Slavs**, invaded Europe, 2522, 3623  
joined the Eastern Church, 3150  
**Sleep**, brain while we are asleep, 3379  
hearing when we sleep, 1575  
our thoughts when we sleep, 1365  
sleep with flowers in the room, 1370  
sufficient sleep, 3379  
what wakes people up, 425, 3435  
why babies require so much sleep, 3379  
why our eyelids close during sleep, 1272  
why we cannot grasp a bar tightly when we first wake up, 5168  
why we go to sleep, 423  
why we sleep quickly in the dark, 1266  
with the face covered, 2234  
with the moon shining on us, 3378

**Sleeping Beauty**, story with pictures, 1681

**Sleeping-cars**, invented, 2669

**Sleeping sickness**, how it affects men, 3145

**Sleep-walking**, 157, 2672

**Sleigh**, in Canada, 5209

picture, 3745

**Slender false brome**, picture, 1338

**Slidell, James M.**, Confederate Commissioner, 2014

**Silt**, how to repair a silt, 3515

**Sloane, Sir Hans**, naturalist, 1162

**Sloes**, grow on blackthorn, 3450

**Sloth**, animal, 48, 49, 50, 862

pictures, 51, 865

the giant, 5570

**Slug millipede**, 3296

**Slugs**, how to get rid of them, 3278

**Sluys**, sea victory, 750

**Smallpox**, and vaccination, 2459

**Smell**, affects taste, 2208, 4627

air-waves and smell, 3861

in man and animals, 3720

most things smell, 1571

why a cold affects smell, 3240

why things smell differently, 1572

**Smirke, Sir E.**, built British Museum, 1162

**Smith, Adam**, life, and portrait, 211, 216

**Smith, John**, at Jamestown, 514

picture, 519

story of Pocahontas and, 1329

**Smith, John W.**, rescued survivors of the

Larchmont, 3106

**Smith, Joseph**, and Mormonism, 1832

**Smith, Samuel**: see Poetry Index

**Smith, Samuel Francis**, author of song Amer-

ica, 2956

**Smith, Sir Donald Alexander**, life and work,

4470

picture, 4471

**Smith Sound**, view near, 52

**Smoke**, what becomes of smoke, 4337

what it is made of, 2228

what it is the result of, 916

why it has no force, 5250

**Smoke-rings**, box that makes, with picture, 4674

how they are made, 3466

**Smollett, Tobias**, life, 1731; portrait, 1725

**Smolt**, young salmon, 2680

**Smooth meadow grass**, and picture, 2979

**Smooth snake**, and picture, 1378, 1381

**Smudgegraphs**, and pictures, 4138

**Smyth, Dr. William**, sacrificed his life, 468

**Snail**, different kinds of snail, 4770

how bees treat a snail, 2824

makes its own shell, 914

tooth of, magnified, picture, 2326

why only empty shells are found, 3865

**Snake**, can do without food, 2456

great snake family, 1373

has no eyelids, 1272

how snakes move, and picture, 4443

pictures, 1375

poison in its fang, 160, 4233

snake and file, fable, and picture, 1793

snake's parlour, tale, 1321

**Snake-charming**, how it can be done, 1378

**Snakeroot**, black: see Cohosh, black

**Snake's-head**, plant, 4968; picture, 4964

**Snap**, game, 4672

**Snapdragon**, plant, 1074; picture, 2823

**Sneezing**, why we sneeze, 778, 4628

**Snipe**, its family, 1958

**Snip-snap-anorum**, game, 4885

**Snorro**, first child born in America, 941

**Snow**, how it forms into waves, 2518

how it warms our hands, 1643

how snow changes a place, picture, 1129

how snow protects plants, 2134

snow and rain together, 2073

snow on mountains, 3859

takes beautiful forms, 2519

the snow girl of sunny land, story, 2305

what it is, 2509

why it is white, 1133

why salt melts snow, 3864

**Snowberry**, picture, 3895

**Snow-bunting**, 2057

**Snowdon**, the elves of, legend, 465

**Snowdrop**, bulb root plant, 573

how to treat, 1610; with picture, 733

in gardens, 5272

**Snowdrop and the dwarfs**, story, and pictures,

2089, 2090

**Snowflakes**, lighter than raindrops, 3036

picture, 2519

**Snow-leopard**, and picture, 139, 136

**Snow man**, pictures, 2517, 4891

**Snow mountains**, 2516

**Snowshoeing**, in Canada, 5209

**Snow waves**, picture, 2518

**Snowy petrel**, its nest, 1626

**Soap**, colour of soapsuds, 2236

how it cleans things, 2236, 3234

why the colour does not come off, 3758

**Soap-bubbles**, game, 3516

how they hold together, and picture, 1778, 1779

what to do with, pictures, 3386

why they are round, 1779

why they rise and fall, 1780

**Soapstone**, in Canada, 5600

**Sobieski, John**: see John III. of Poland

**Society Islands**, discovery, 1459

**Sock**, how to knit, and picture, 4669

**Socotra**, island in the Indian Ocean, 1876

**Socrates**, pictures, 1305, 4617, 4625

story of his life, 1306, 5129

what he said of death, 4745

**Soda**, what it is, 1801

**Sodium**, detected by the spectroscope, 2717

exists in the sun, 2088

in hydrochloric acid, 1797

its colour when hot, 1860

its weight, 1292

what it is, 223

**Sodium bicarbonate**, how to make it, 1801

in the blood, 1569

**Sodium carbonate**, its importance, 1798

its strong alkali and weak acid, 1801

**Sodium chlorate**, what it is, 3971

**Sodium chloride**, how formed, 1797, 1800

its strong alkali and acid, 1801

what it is, 2344, 2638

**Sofia**, capital of Bulgaria, 3222

**Soft brome**, picture, 1336

**Soil**, full of microbes, 3342

how to improve it, 2254, 4462

how to prepare it, 719

its uses, 3339

**Solan goose**: see Gannet

**Solar system**, changes taking place, 2279

comets, meteors, and sky-dust, 2495

from a nebula, 2862

how it has grown, 307

its story, 144

picture, 1946

sun discovered to be the centre, 1942

sun's family of worlds, 2423

what it consists of, 1946

**Solder**, what it is formed from, 1870

**Soldier and sailor beetles**, picture, 3893

**Soldiers**, armour, 157

**Sole**, fish, 206, 1172; picture, 205

**Solferino**, battle of, picture, 3021

**Solinen**, salt-field, picture, 224

**Solitaire**, bird, 1430; picture, 1425

**Solomon Islander**, picture, 1463

**Solomon's seal**, plant, 5271

**Solon**, an Athenian, his life, 1301, 5126

reproved by Æsop, 2910

- Solway Moss**, Scots routed, 3086  
**Somaliand**, where it is, 4262  
**Somerset**, meaning of name, 5388  
**Songs**, American, and song-writers, 2953  
 D'ye ken John Peel? history of song, 5493  
 writers of the songs, 3737  
**Song-thrush**, 2058; egg, picture, 1744  
**Sonnet**, its number of lines, 343  
**Sons**, the tale of the dutiful sons, 2301  
**Sons of Daniel Boone**, organised by Dan Beard, 3583  
**Sons of Liberty**, 979  
**Soil**, enriches the soil, 2254  
**Soot-water**, how to prepare it, 3398  
**Sophocles**, great poet, 1302  
**Sorel, Canada**, history, 5428  
**Sorrel**, mountain, 4834; picture, 4832  
**Soul, Marshal**, in Peninsular war, 4362  
**Sound**, behaviour of a sound, 4913  
 effect of covering ears with hands, 1643  
 effect of empty room on voices, 1643  
 effect of overtones on sound, 4864, 4913  
 empty vessels and sound, 3756  
 flame and sound-waves, and picture, 4917, 4918  
 how a sound is heard, 509  
 how sound travels, 4631  
 how sound-waves travel, picture, 3867  
 impossible without air, 3863  
 interference in sound-waves, 4918  
 its effects go on for ever, 5169  
 its pitch, 4582, 4759  
 its reflection, 4583, 4584, 5021  
 its refraction, 4584  
 Koenig's flames, picture, 4913  
 lowest pitched sound, 3233  
 music and noise, 4757  
 rate of travelling, 4582; with picture, 4581  
 sound and the scratching of a pin, 3355  
 sound-waves of an orchestra, 4758  
 thinking by sound, 4944  
 travels more slowly than light, 777, 3687  
 wave in the air, 1057, 3762  
 waves produced by instruments and voices together, 4917  
 what it is, 4581  
 why sound travels well over water, 2455  
 why the pitch of a note varies, 2717  
 why we cannot feel sound, 3233  
     **See also Hearing and Noise**  
**Sound, The**, strait, 3598  
**Soundboard**, why it is used in a piano, 1017  
**South Africa**, how it came under British rule, 1765  
 scenes in, pictures, 1764, 1767  
 war: see Boer war  
**South America**, colonised by the Spanish, 4502  
 exploration, 4502, 4504  
 history, 4497  
 its states, 4500  
 map, 4496  
 native way of measuring heights, 5666  
 people and scenes, pictures, 4502, 4503, 4567, 4576  
 physical features, 4497, 4500  
 plants and animals, 4498  
 railways, 4569, 4572, 4574  
 Raleigh's expedition to, 5395, 5396  
 South America of to-day, 4567  
 struggle for independence, 4505  
**South Australia**, country, 1360  
**South Carolina**, Civil War emblems, 5440  
 secedes, 2010, 3536  
 threatens war with the Union, 3535  
 threats of nullification, 1828  
 why called Palmetto State, 5440  
**South Dakota**, admitted, 3537  
**Southey, Robert**: see Poetry Index  
**South Island**, New Zealand, 1464  
**Southland**, province of New Zealand, 1461  
**South Magnetic Pole**, 4438, 5054  
**Southworth, Mrs. Emma**, life, 2043  
**South Pole**, 410, 5167  
 exploration: see Polar exploration  
**Sovereigns**, why people are not allowed to make them, 3034  
 why they are made of gold, 4342  
**Sow-thistle**, 4112; pictures, 3975  
**Space**, how far does it extend, 5484  
 how to measure space, 3670  
 if we should go on travelling upward, where should we end? 5575  
 is infinite, 1771, 4232  
**Space**, what is it made of? 5484  
**Spade**, for digging, 233  
 how to mend a wooden spade, 4249  
**Spade the gardener**, game, 4885  
**Spain**, added to the German states, 2527  
 attacked the Moslems in Africa, 4260  
 bull-fighting, 3362  
 climate, 3352  
 colonies in the West Indies, 2184  
 conquered by Rome, 5264  
 flag, picture in colour, 1640  
 fleet destroyed by Blake, 1027  
 French driven out of Spain, 2276  
 history and geography, 3351  
 interests to be considered in treaty, 1387  
 loses Florida, 386  
 Moorish work, 3356  
 Philip II., the gloomy king of, 5498  
 possessions in Africa, 4262  
 power in South America lost, 4505  
 royal standard, 1640  
 sent the Armada against England, 848  
 soldiers marching, picture, 1879  
 Spain and Portugal, map, 3353  
 takes Florida, 1387  
 towns and trade, 3361  
 war with, and results, 3538  
 war with Great Britain, 1095  
 war with Netherlands, 3460  
 won by the Romans, 416  
**Spalato**, ruins of Diocletian's palace, 534  
**Spanish chestnut-tree**, and picture, 3652  
**Spanish iris**, 5272  
**Spanish language**, in South America, 4568  
**Spanish Succession, War of the**, 2540  
 date of the war, 3358  
 its cause, 2530  
**Sparrow**, 2216, 2328; picture, 2217  
**Sparrow-hawk**, 1846; pictures, 51, 1744, 1845  
**Sparta**, city and state, 1304, 5124, 5129  
 gymnasium, picture, 5123  
**Spartacus**, appeal to gladiators, 5506  
 story of his life, 2912  
**Spartans**, drove back the Persians, 1302  
 refused to aid the Athenians, 1803  
 their last stand at Thermopylae, 5062  
 what "to be a Spartan" means, 5126  
**Spasms**, there are two kinds, 4440  
**Speaking-trumpet**, 4584, 5022  
**Specific gravity**, of gases, 3816  
 of iron picture, 3813  
 of solids and liquids, 3816  
 what it is, 3814  
**Specific gravity bottle**, what it is, 3815  
**Speckbacher, Albert**, the story of, 320  
**Spectacles**, how do they help us to see? 5639  
 their use, 2319, 4297, 4402  
**Spectator, The**, newspaper, 4676  
**Spectroscope**, in astronomy, 1949, 2716  
 picture in colour, face 2719  
**Spectrum**, how it is made up, 4508  
 picture in colour, face 2718  
 there are two kinds of spectra, 2862  
 what it is, 2716, 5041  
**Spectrum analysis**, 5042  
**Speech**, effect on air, 349  
 how it is governed by the brain, 3779  
 its substitutes among animals, 5325  
 man probably always talked, 3978  
 speaking and hearing, 3953  
 talking and singing, 4073; with picture, 4073  
 why a baby cannot talk when born, 2873  
 why it is pleasant and musical or otherwise, 5644  
**Speed**, time and space together, 3672  
**Speedwell**, germander, 4292; picture, 4287  
 plant, 2042, 5118  
**Speke, John H.**, African explorer, 284  
 monument in Kensington Gardens, 4252  
**Spelling bee**, game, 237  
**Spencer, Herbert**, his thinking power, 5019  
 life, 857; and portrait, 851  
 on dissipation of energy, 4368  
 on speaking and singing, 4073  
 on the cell, 783  
 on the law of gravitation, 3547  
 on the study of the mind, 4734  
 theory about the brain, 3780  
 what he said of pleasure, 4746  
 what he thought of the universe, 3840  
**Spenser, Edmund**, Faerie Queene, 687

# INDEX

- Spencer, Edmund**, story of his life, 3328; picture, 3329
- Spermaceti**, from the sperm whale, 1085
- Sperm whale**, 1082, 1085; picture, 1083
- Sphenodon**, its life-history, 1217, 3976  
picture in colour, 1225
- Sphinx**, great piece of sculpture, 4159  
near the pyramids, 5004  
pictures, 2738, 4163, 5006  
riddle of the Sphinx, story, 2738  
what it is built from, 2336  
what it is like, 4785
- Sphinx moth**, 2990
- Spice Islands**, Magellan's westward way, 4502  
taken by the Dutch, 1879
- Spider**, how did the spider catch the fly? problem,  
its web, 306, 914, 1170  
life-story, 3298  
pictures, 2322, 2326, 3296, 3299, 3301  
web, picture, 306  
why we fear spiders, 4233
- Spider-crab**, 2584; pictures, 2584
- Spiderwort**, plant, and picture, 2564
- Spies**, trial of the spy, a story, 4281  
two spies of the Revolution, 3811
- Spikenard**, wild, picture, 4836
- Spinach**, how to grow it, 3922
- Spinal cord**, 2442, 5563
- Spinalanza**, town saved by children, 964
- Spine**: see Backbone
- Spinifex**, an Australian grass, 1364
- Spinning machinery**, invention, 1096
- Spinning pictures**, how to make them, and pictures, 5455
- Spinosa, Baruch**, his life, 4624  
on death, 4745; pictures, 4623, 4625
- Spiny dog-fish**, picture, 2447
- Spiral nebulae**, and picture, 2862, 2863
- Spires**, of churches, pictures, 1163
- Spirits**, contain ethyl-alcohol, 1872  
why they burn, 5022
- Spirit varnish**, how to use it, 2256
- Spittle**, what it is, 2205
- Spitsbergen**, its exploration, 4724
- Splice**, what it is, 1443
- Splices**, and picture, 3283, 3284  
in a stick, 5353
- Sponge**, how other creatures live in it, 2340  
how to clean a sponge, 4466  
its life-story, and picture, 1725  
picture, 51  
what it is, 4824  
why it holds water, 4824
- Spoonbill**, bird, 1956; picture, 1967
- Spoons**, game, 5000
- Spoons**, how the bowl is made, picture, 4740  
of various dates, picture, 4735
- Spotted dog-fish**, picture, 2447
- Spotted flycatcher**, bird, 2218  
pictures, 1744, 2217
- Spotted mosquitoes**, picture, 3143
- Spottsylvania Court House**, battle of, 2019
- Sprains**, how to cure them, 3397
- Sprat**, and picture, 205, 206  
how sprats are caught, pictures, 3766
- Spree River**, flows into the Elbe, 2750
- Spring**, coming of, a picture, 5630
- Spring**, hot, 587
- Spring tides**, how they are caused, 2281
- Spruce fir**, and picture, 3657  
in Canada, 5604  
value to Canadians, 5429
- Spruce-laurel**, description, 4418; picture, 4420
- Square**, for marking wood, with picture, 338  
how to draw a square, 1213  
how to make pictures in squares, 2487  
queer pictures built from squares, 1073  
square puzzle, and picture, 5112, 5202  
to form a, with pieces of card, 5666  
train made from, and picture, 1818
- Squids**, cuttle-fish, 2450
- Squills**, in gardens, 5272
- Squinting**, its cause, 3544
- Squirrel**, 767  
dwelling, 5417  
pictures, 51, 768, 8894
- Stranger**, Cashmere, bridge, picture, 31
- Stable equilibrium**, what it means, 3673
- Stadacona**, Indian village, 3618
- Staffa**, island, picture, 408
- Staff of Life**, bread called the, 5644
- Stafford**, meaning of name, 5388
- Stag**, has fine horns, 382  
picture, 4755  
stag in ox-stall, fable, and picture, 4905  
the stag looking into the water, fable, 2339
- Stag-beetle**, pictures, face 3140 in colour, 3894
- Stages**, how to build, and picture, 4771
- Stag Waterfall**, pictures, 409, 4341
- Stains**, how to take stains out, 4456
- Stalactites**, and pictures, 154, 406, 1296, 4816
- Stamen**, of flower, and picture, 3736
- Stamp Act**, passed, 3898  
what it was, 979
- Stamp collection**, with pictures, 5287
- Standard**, battle of the, 594, 3080
- Stand-up maze**, game, 5106
- Stanley, Lady**, her picture, 4275
- Stanley, Lord**, governor-general, 4106
- Stanley, Henry Morton**, explorer, 283  
explored the Congo, 4264; picture, 284
- Stanley, William**, and the Great Plague, 625
- Stanley Falls**, on the Congo, 4254
- Stanley Park**, views in, 5610
- Starch**, a carbo-hydrate, 1872  
in our bodies, 2345  
made by green leaves, 2695  
turned into sugar by saliva, 2206  
why it stiffens clothes, 4443
- Starfish**, 661, 1410, 2342  
pictures, 51, 1414, 2337
- Stark, John**, defeats British at Bennington, 988  
joins the Revolutionary Army, 984
- Starley brothers**, first safety bicycle, 2835
- Starling**, bird, 2214; pictures, 1744, 2211
- Star of Bethlehem**, flower, 5272
- Stars**, are all in movement, 1131  
are suns, 1944  
collisions among, 5384  
distance from each other, 1270  
do they really twinkle? 5483  
falling stars are not real stars, 3687  
guided travellers, 1942  
how they move, 2717  
how to guess their size, 4438  
how to measure the distances, 2614  
legends of the stars, 3313  
light after they cease to exist, 1941  
light that explains the stars, picture in colour, face 2718  
may be divided into three groups, 2719  
might cause nebulae by colliding, 2864  
origin of names, 2235  
quality of their light changes, 2088  
shape of the stars, 2080, 2879  
star seen at time of Armada, picture, 1941  
stars at different seasons, pictures, 2611, 2613, 2615, 2617  
supposed to control man's fate, 1940  
telegraph to the stars, picture, 1943  
the colour of the stars, 2715  
their mass, size, and number, 2616, 4437  
their use, 3437  
there are many kinds, 1948  
the stars as we see them, 2609  
what they are made of, 910, 1949; picture in colour, face 2719  
world of stars has probably a limit, 1774  
why they are not seen by day, 304  
why not always visible, 3761, 4601  
why they resist gravitation, 3544
- See also the Names of Stars**
- Star-Spangled (The) Banner**, history of song, 2955  
writing of, 1399
- Statesmen**, twelve British, 2379
- Statue**, what it is, 4159
- Stavanger**, very old town, 3602
- Steam**, how it drives an engine, picture, 1569  
how it gets its power, 1569, 5250  
in ships, 73, 74  
why it is not yellow, 2235  
why it puts a light out, 3758  
why steam comes from hot water, 1574
- Steamboat**, invention of, 2667, 3534  
pictures in colour, face 73  
what is wrong with this steamer? puzzle, and picture, 3510, 3516
- Steam-engine**, came into use, 1096  
of cardboard, and picture, 3917

# INDEX

- Steamer-duck**, bird that cannot fly, 1430  
**Stearine**, obtained from fats, 2409  
**Stedman, Edmund Clarence**: see Poetry Index  
**Steel**, gets tired, 3977  
 how buildings are made of, 622  
 how it is made, 1869, 1870  
 how steel is got from iron, 1292  
 manufacture of, with pictures, 5537  
 moved by magnets, 5471  
 power to resist stretching, 3695  
 production of in U. S., 2660, 2662  
 sparks made when steel is struck, 1061  
 used for bridges, 19, 3695  
**Steele, Richard**, life, and portrait, 4675  
 Steele and Addison, picture, 4677  
**Steel pens**, how they are made, pictures, 3402  
**Steeplechase**, game, 724  
**Steers, Edward**, life, 3489; portrait, 3483  
**Steffe, William**, said to be author of the song  
 John Brown's Body, 2966  
**Stegosaurius**, giant lizard, picture, 44  
**Stein, Dr.**, explored Central Asia, 108  
**Stella**, meaning of name, 2507  
**Stella**, the lady Swift loved, 1728  
**Stella**, the stewardess of the story, 320  
**Steller sea-eagle**, 1840  
**Stem-stitch**, how to do it, 2133  
**Stencilling**, how to do it, 1921, 4250  
**Stephen**, king of England, 594, 2702  
 made king, 2532  
**Stephen**, names derived from, 4752  
**Stephen, Sir George**, life-work, 4472  
**Stephen, St.**, king of Hungary, 2854  
**Stephens, Alexander H.**, vice-president of the  
 Confederacy, 2010  
**Stephenson, George**, his engine, and picture, 613  
 his life, 609; with pictures, 609, 611  
 made the first steam-engine, 1100  
**Stephenson, Robert**, built the Britannia Bridge,  
 19  
 George Stephenson's son, 616  
**Steppes**, plains of Russia, 3075  
**Stereoscope**, what it does, 2460, 2610  
**Sterne, Laurence**, life, 1725; portrait, 1730  
**Stettin**, port in Germany, 2750, 2752  
**Steuken, Baron**, picture, 981  
**Stevens, Alfred**, sculptor, 4162  
**Stevenson, Robert Louis**, his life, 2316  
 in Samoa, 2190  
 poems: see Poetry Index  
 portrait, 2307  
 portrait relief, with pictures, 4841, 4848  
**Stewart, Charles**, at Tripoli, 2900  
**Stewart, Francis G.**, saved boy, 3108  
**Stewart Island**, New Zealand, 1464  
**Stick**, noise when swung in the air, 4827  
 two ways of splicing a, with picture, 5353  
 why a stick floats, 684  
 why a stick holds together, 617  
 why does a stick seem to bend when put into  
 a pond? 5685  
**Stick and ring**, game, 3516  
**Stickerchief**, game, and picture, 3513  
**Stick insect**, 3412; pictures, 3407, 3409  
**Stickleback**, can live in sea or river, 2675  
 its life-story, and picture, 2683, 2684  
**Stilt**, bird, what it is like, 1958  
**Stilts**, how to make, and pictures, 4883  
**Sting-bull**, fish, and picture, 209, 210  
**Stinging-nettle**, description, 4292; picture, 4290  
**Stings**, how to treat them, 3397  
**Stirling Bridge**, battle, 113  
**Stitch**, in the side, its cause, 2622  
**Stitching**, and pictures, 456, 717  
**Stoat**, 140; picture, 3894  
**Stock**, flower, 4110, 5270  
**Stock-dove**, lives in our woods, 2214  
**Stock Exchange**, of New York, 4308  
**Stockholm**, town, 3600; picture, 3595  
**Stocking**, tale by Christmas stocking, 2142  
**Stockton**, first railway built, 614  
**Stock-yards**, Chicago, picture, 2659  
**Stodart, M. A.**: see Poetry Index  
**Stoddard, E.**: see Poetry Index  
**Stomach**, how it is affected by the brain, 3109  
 its formation and work, 2343  
**Stomach-ache**, how it is caused, 2346  
**Stomata**, what they are, 228  
**Stomoxys**, small black fly, 3144  
**Stone, Frank**, his picture, The Duet, 3911  
**Stone, M.**, his picture of James Watt, 611  
**Stone**, builds up living creatures, 4821  
 for building, in Canada, 5600, 5604  
 for building, in U. S., 2661  
 stone travelling in a circle, picture, 3674  
 tools of, found in this country, 192  
 what a stone is, 915  
 why a hammer will break a stone, 2880  
 why a stone comes down again, 4549  
 why a stone sinks, 685  
**Stone Age**, 622, 1292  
**Stone bramble**, picture, 4109  
**Stonechat**, 2067; pictures, 1744, 2063  
**Stone-clover**, description, 4288; picture, 4286  
**Stonecrop**, biting, picture, 4287  
 family of, 4284  
 garden varieties, 5271  
 how to treat, 1074, 3949  
**Stonehenge**, and the sun's movements, 1939  
 its history, 5003; picture, 5003  
 what it may have been, 194  
 what we learn from it, 4116  
**Stone icicle**, in caves, 410  
**Stones**, precious, in Canada, 5600  
**"Stonewall Jackson"**, nickname of General T.  
 J. Jackson, 2011, 2013  
**Stool-ball**, game, with pictures, 4029  
**Stopper**, to remove a glass, 5523  
**Store**, that never grew less, legend, 3208  
**Stories**, by title  
 Achilles and the Queen of the Amazons, 962  
 Adventures (the) of Reynard the Fox, 5310  
 Aladdin and the wonderful lamp, 81  
 Alexander and the pirate, 5308  
 Alexander's battle with the lion, 5313  
 Ali Baba and the forty thieves, 183  
 Alice and the Queen of Hearts, 3115  
 Alice in Wonderland, 2929  
 Amy Robsart, 3854  
 Androcles and the lion, 4704  
 Andromeda, 3313  
 Anemone, the, 190  
 Angel of the dimples, 2168  
 Angler (the) and the little fish, 3853  
 Ant (the) and the grasshopper, 2141  
 Ape (the) and the wedge, 6421  
 Arcadian (the) boar, 5163  
 Ass (the) in the lion's skin, 3853  
 Avocat ('') et les poires, 4644  
 Babes in the wood, 1523  
 Bag (the) of peas, 5654  
 Ball (the) in the hollow post, 5344  
 Baths (the) of Bath, 1108  
 Battle with the giant, 5164  
 Bear (the) in the well, 4834  
 Beauty and the Beast, 2735  
 Belling the cat, 463  
 Biddenden Maids, the, 4277  
 Big Jar (the) of water, 5344  
 Bird-girl (the) with golden wings, 1796  
 Birds (the) with the brazen wings, 5163  
 Black Diamond, 3579  
 Blue (the) bird, 3206  
 Blue (the) bird, 5083  
 Box (a) of good luck, 2304  
 Boy (the) at the giants' castle, 713  
 Boy (the) who cried "wolf," 3310  
 Boy (the) who found light, 5344  
 Boy (the) who had no paper, 5344  
 Boy (the) who lost his shadow, 5693  
 Boy (the) who slept in the king's chair, 4642  
 Boy (the) whom France forgot, 331  
 Boys (the) and the frogs, 2303  
 Brahman (the) and the goat, 5421  
 Brahman (the) and the pots, 5421  
 Brave (the) boy of Knaresborough, 1109  
 Brave (the) little dog of the wood, 5160  
 Brave (a) little Quakeress, 1327  
 Brer Rabbit and Brer Fox, 187  
 Brer Rabbit and Miss Cow, 188  
 Brer Rabbit and Mr. Bear, 187  
 Brer Rabbit and the tar-baby, 3851  
 Brer Rabbit helps Brer Tortoise, 4702  
 Brer Rabbit tricks Brer Fox, 4522  
 Brer Rabbit's riding-horse, 4643  
 Brer Tortoise helps Brer Rabbit, 4702  
 Bride (the) of the forest, 1067  
 Bride (the) of the wandering prince, 1190  
 Brownie (the) of Snaefell, 2377  
 Burial (the) of a city, 5314  
 Byard's famous leap, 3208  
 Capture (the) of the sacred stag, 5163

# INDEX

## Stories, Cassiopeia, 3312

Cat (the) and the mice, 4274  
 Cat (the) and the parrot, 2484  
 Cat (the), the eagle and the sow, 4905  
 Catching a thief, 2143  
 Cauld (the) lad of Wilton Hall, 3648  
 Cepheus, 3313  
 Challenge (the) of the king, 870  
 Chest (the) of Caller Pit, 4277  
 Cheval (le) et l'âne, 4644  
 Chien (le) et l'âne, 4644  
 Child Charity, 1048  
 Child Roland to the dark tower came, 5081  
 Choice (the) of Marpessa, 1433  
 Christmas Carol, 2169  
 Christmas Eve, a tale of, 2142  
 Chrysanthemum, 1677  
 Cinderella and the glass slipper, 818  
 Cleansing the stables, 5163  
 Clever (a) bad man, 4930  
 Cobbler (the) and the elves, 712  
 Cobblers (the) and the cuckoo, 2297  
 Coming (the) of King Arthur, 1680  
 Coming (the) of the king, 867  
 Comment Gotham acquit une mauvaise réputation, 4706  
 Conqueror (the) and the artist, 5312  
 Conqueror's (the) triumph, 5308  
 Cornflower, the, 1677  
 Crab (the) and her mother, 3062  
 Crane (the) and the wise crab, 4224  
 Crock of gold in the plain of York, 1983  
 Crossing-sweeper, the Bank of England, 1796  
 Crow (the) and the pitcher, 3508  
 Cunning (the) farmer and the dwarf, 4798  
 Cunny rabbit and the lion, 461  
 Days, the story of the, 83  
 Dick Whittington and his cat, 326  
 Dinner (the) at the inn, 5159  
 Discontented (the) fir-tree, 3575  
 Dog (the) and the ass, 2849  
 Dog (the) and the shadow, 560  
 Dog (the) and the wolf, 1979  
 Dog (the) in the manger, 189  
 Dog (the) of the underworld, 5164  
 Dog (the) that came home again, 4799  
 Dog (the) that knew his master, 4003  
 Dog (the) that remembered Ulysses, 4221  
 Dogs (the) that became friends, 5308  
 Dofa Beatrice, 5231  
 Donkey's wish, the, 2378  
 Dove (the) and the ant, 189  
 Dragon (the) of St. Leonard's, 3648  
 Duchess (the) who sat in rags, 4640  
 Dutiful sons, the, 2301  
 Eagle-girl (the) of the mountains, 711  
 Earl's daughter and beggarman, 1322  
 Elfin (the) hill, 4513  
 Elves (the) of Snowdon, 465  
 Emperor (the) and his servant, 1188  
 Emperor (the) and the figs, 4935  
 Emperor's new clothes, 3641  
 Enchanted cave (the) of Richmond Hill, 1983  
 Enchanted (the) horse, 955  
 Enchanted thorn, the, 1677  
 Evangeline, 2461  
 Face (the) no man could look on, 1049  
 Fairies (the) and the hunchbacks, 1106  
 Fairies (the) of the Willey How, 1321  
 Fairies (the) of St. David, 2608  
 Fairy (the) fountain of Killarney, 3166  
 Fairy Horn near Gloucester, 1983  
 Fairy (the) maid of Van Take, 2302  
 Fairy (the) of the New Forest, 3648  
 Fairy (the) tulips, 3208  
 Fairyfoot, 4001  
 Fairy's (the) revenge, 1432  
 Faithful John, 4631  
 Farmer (the) and his dog, 5313  
 Farmer (the) and his sacks, 5654  
 Farmer (the) and his sons, 2303  
 Farmer (the) and the stork, 2939  
 Fat (the) and the lean, 5520  
 Fire (the) goblins, 1324  
 Fir-tree (the) and the bramble, 4274  
 Fool (the) on the stool at Folkestone, 1320  
 Foolish (the) Emperor and his fowls, 2301  
 Fools and jesters and kings, 4278  
 For a year and a day, 3648  
 Forbidden (the) room, 1671  
 Forget-me-not, the, 190

## Stories, Founding (the) of the kingdom, 869

Four (the) wise ministers, 4927  
 Four-leaved (the) shamrock, 1110  
 Fowl (the) and the jewel, 560  
 Fox (the) and the ass, 5520  
 Fox (the) and the bear, 3852  
 Fox (the) and the crow, 463  
 Fox (the) and the faithful horse, 967  
 Fox (the) and the frog, 4008  
 Fox (the) and the goat, 3310  
 Fox (the) and the grapes, 560  
 Fox (the) and the lion, 3310  
 Fox (the) and the mask, 2303  
 Fox (the) and the wolf, 2378  
 Fox (the) in the well, 463  
 Frog, the proud, 877  
 Frogs (the) and the bulls, 4804  
 Frogs (the) who wanted a king, 462  
 Geal (le) vaniteux, 4278  
 Geese (the) who kept guard of Rome, 554  
 Gelert, the faithful dog, 5208  
 Geraint and Enid, 1977  
 Giant (the) of Dalton Hill, 465  
 Giant (the) of the Peak, 2377  
 Giant (the) with three golden hairs, 1052 bis  
 Giants (the) and the Isle of Man, 3166  
 Giant's (the) plaything, 5341  
 Girdle (the) of the Amazon Queen, 5164  
 Goat (the) and the lion, 3508  
 Goblin (the) builders of Rochdale, 1321  
 Goblins (the) in the goldmine, 328 bis  
 Gog and Magog, 1318  
 Golden apple, the, 1683  
 Golden (the) apples, 5164  
 Golden (the) bird in the king's garden, 874  
 Goldilocks and the golden crown, 5075  
 Good flea (the) and the bad king, 5305  
 Goose (the) with the golden eggs, 3852  
 Grasshopper (the) of the Royal Exchange, 4522  
 Great Bear, the, 3317  
 Great Dog, the, 3313  
 Great race, the, 188  
 Greedy (the) shepherd, 1046  
 Grenouille (la) orgueilleuse, 4278  
 Guests (the) at the feast, 5309  
 Guy Fawkes and his plot, 1791  
 Hanging the mayor at Bodmin, 1320  
 Hansel and Grethel, 3306  
 Happy (the) land of rest, 1063  
 Hare (the) and the tortoise, 462  
 Heir (the) and the will, 5159  
 Hen (the) and the fox, 4008  
 Hercules, 3314  
 Heron (the), the cat, and the bramble bush, 2744  
 Hole (the) in the wall, 3345  
 Hop-o'-my thumb, 1973  
 Horse (the) and the ass, 2849  
 Horse (the) and groom, 1793  
 Horses for nothing at Westminster, 4636  
 How Alexander crossed the river, 5313  
 How a sultan found an honest man, 2745  
 How Gotham got a bad name, 4130  
 How Napoleon came from Elba, 812  
 How Napoleon rode from Waterloo, 3504  
 How Peter found his shadow, 2843  
 How Rip van Winkle went home, 4800  
 How the bad news reached the king, 4273  
 How the children went home again, 2848  
 How the French reached Moscow, 2094  
 How the mail coach began, 4380  
 How the monks made themselves rich, 4635  
 How the thief was found out, 4933  
 How Truth got to the bottom of the well, 3167  
 Howleglass, the merry jester, 5309  
 Hundred (the) thousand monkeys, 5655  
 Hungry fox (the) and the kitten, 1525  
 Iduna and the golden apples, 3581  
 In the days when men were good, 2092  
 Ironshod (the) woman, 5232  
 Ivory (the) maiden who came to life, 962  
 Jack and the beanstalk, 3159  
 Jack, the giant-killer, 1794  
 Jackal (the) and the lion, 5349  
 Jackdaw (the) and the pigeons, 3852  
 Jackdaw, the vain, 877  
 Jenny Martin, 5422  
 Jeune (la) fée du Lac Van, 4130  
 Jupiter and the Ass, 3311  
 Kafir (the) and the lion, 5656

# INDEX

**Stories, King Arthur and his knights, 867**  
 King (the) of the cats, 2744  
 King of the Golden Mountain, 4225  
 King (the) of the Golden River, 1433, 1526  
 King (the), the nobleman, and the peasant, 3647  
 King (the) who came to Cashmere, 2745  
 King (the) who could not sleep, 5347  
 King (the) who was loved, 5312  
 King Wren, 2377  
 King's (the) guest, 5651  
 King's (a) revenge on Cromwell, 4640  
 King's (the) watchers, 4935  
 Knickerbocker days in New York, 2245  
 Knight (the) and the wonderful stone, 2745  
 Lady Agnes of St. Dunstan's Tower, 3312  
 Lady Anne Grimston, story of, 1673  
 Land (the) of the red daisies, 708  
 Land (the) of youth, 2093  
 Lark (the) and her young ones, 2378  
 Lawyer (the) and the oyster, 4938  
 Lawyer (the) and the pears, 2849  
 Likeness (the) of Jesus, 4700  
 Lily (the) maid of Astolat, 1185  
 Lion (the) and the cat, 5421  
 Lion (the) and the deer, 5520  
 Lion (the) and the four bulls, 3508  
 Lion (the) in love, 4804  
 Little Claus and Big Claus, 323  
 Little Goody Two Shoes, 5157  
 Little Ida's flowers, 3506  
 Little Jacob's friend, 3164  
 Little (the) Lombard sentinel, 4938  
 Little (the) maiden of the lake, 4006  
 Little (the) man and the drums, 5207  
 Little (the) man by the secret shore, 4928  
 Little (the) pixies of Land's End, 1796  
 Little princess in the tower, 1980  
 Little Red Riding Hood, 2140  
 Little (the) red shoes, 332  
 Little (the) spinner at the window, 5419  
 Little tiny Thumbeline, 3450  
 Lonely (the) old woman of Morocco, 5316  
 Lord (the) of the lions, 2608  
 Lords (the) of the grey and white castles, 1897  
 Lost (the) boys in Never-Never-Land, 2844  
 Loup (le) et la cigogne, 4278  
 Love laughs at locksmiths, 1525  
 Lover's (the) Bridge, at Glaisdale, 1109  
 Luck (the) of Edenhall, 3166  
 Luck (the) of Simple Jack, 2740  
 Mad bull (the) of Crete, 5164  
 Mad (the) tea-party, 3055  
 Magic box, the, 5078  
 Magic boy (the) fiddler of Sicily, 557  
 Magic carpet, the, 1683  
 Magic pen (the) of truth, 2092  
 Magic (the) tinder box, 4127  
 Maid (the) of Ullswater, 1108  
 Man (the) and his negro servant, 4806  
 Man (the) in the Moon, 4276  
 Man (the) who disappeared, 1112  
 Man (the) who drove downstairs, 5694  
 Man (the) who gave away, 2166  
 Man (the) who knocked at the gates, 5307  
 Man-eating horses, 5164  
 March (the) of the Ten Thousand, 5077  
 Master (the) and his scholars, 5312  
 Mercury and the woodman, 2939  
 Mermaid (the) of Lizard Head, 1321  
 Mermaid's (the) pool, 466  
 Merry (the) cobbler and his coat, 2372  
 Merrymin, the little fiddler, 4375  
 Midas, the king with the golden touch, 556  
 Miller (the) and his pets, 3847  
 Minstrel (the) Queen of Spain, 1432  
 Miss Dollie and Captain Blue, 5071  
 Miss Goose's washing, 4703  
 Mona and the forsaken merman, 968  
 Months, story of the, 4515  
 Mother Shipton, 2096  
 Music (the) of the willing heart, 5204  
 Mysterious (the) portrait, 5161  
 Napoleon's wonderful escape, 4227  
 Nouraddin and the wonderful Persian, 2739  
 Oes (les) qui gardaient Rome, 3855  
 Old (the) hound, 3124  
 Old (the) man and his sons, 3062  
 Old Scarborough, 1320  
 Old (the) Women of Brighton, 1108

**Stories, Orion, 3313**  
 Pair (a) of magic slippers, 2606  
 Pair (a) of old boots, 4275  
 Pansy, the, 170  
 Parson (the) and his clerk at Dawlish, 1983  
 Partners, 4959  
 Passing (the) of King Arthur, 3311  
 Peacock (the) and Juno, 4008  
 Peasant (the) and the three robbers, 5424  
 Pegasus, 3313  
 Penelope's marvellous tapestry, 962  
 Perseus, 3313  
 Peter Pan, 2543  
 Peter Simple, 2028  
 Pigeon (the) and the magpie, 2744  
 Pits (the) of Woolpit, 3166  
 Pleiades, the, 3314  
 Plus (la) sage fille du Wessex, 4007  
 Pocahontas, 1329  
 Poet (the), the goblin, and the donkey, 2377  
 Pope (the) who ran away, 459  
 Prince (the) who was poor, 2369  
 Prince's (the) five servants, 4271  
 Princess (the) and King Grislybeard, 1189  
 Princess (the) of the Ivory castle, 2092  
 Princess (the) who became a goose girl, 2492  
 Princess' (the) golden ball, 1317  
 Princess' wedding feast, 5082  
 Priscilla, 2261  
 Proserpine, 5316  
 Proud (the) king of Kamera, 1525  
 Proud lady (the) who turned a somersault, 5231  
 Punch and Judy, 1907  
 Puss-in-boots, 1106  
 Queen (the) who hid by night, 4638  
 Queen (a) who was turned away, 4642  
 Quest (the) of the Golden Fleece, 185  
 Race (a) with death, 4958  
 Raid (the) of the witches, 815  
 Rapunzel's golden ladder, 2306  
 Rich (a) man's diamond, 4934  
 Riddle (the) of the Sphinx, 2738  
 Rip van Winkle in the mountains, 4696  
 Robin Hood and his merry men, 2601  
 Robin Round Cap Well, 1321  
 Roi (le), le noble, et le paysan, 4008  
 Rose, the, 190  
 Rose (the) maiden, 1114  
 Rose of Jericho, 1677  
 Rosy apple, the, 5345  
 Rum-pel-stilt-skin, 553  
 Sacrifice (the) of Marcus Curtius, 2301  
 Sad (the) heart of Little Trott, 3209  
 St. George and the Dragon, 960  
 St. Keyne's Well, 4277  
 St. Vincent's Rocks, 3208  
 Santa Claus, 2146  
 Scramblepipe tries to understand, 3644  
 Search (the) for a happy man, 5689  
 Search (the) for the real princess, 324  
 Shepherd maid (the) and the sweep, 4633  
 Shop Window, a tale of a, 5691  
 Silent (the) princess, 4797  
 Silkie (the) wife in the Shetland Isles, 556  
 Simmerdale Water, 465  
 Sindbad the Sailor, 811  
 Sir Galahad, Vision of, 871  
 Sir Tristram of Lyonesse, 3211  
 Slaying the lion, 5163  
 Sleeping beauty, the, 1681  
 Sleepy student, the, 5344  
 Snake (the) and the file, 1793  
 Snake (the) with a hundred heads, 5163  
 Snake's (the) parlour, 1321  
 Snowdrop and the dwarfs, 2089  
 Snow girl (the) of sunny land, 2306  
 Soldier (the) and his judge, 5313  
 Son (a) of a gun, 248  
 Son (a) who did his duty, 5308  
 Stag (the) in the ox-stalls, 4806  
 Stag (the) looking into the water, 2339  
 Stars, an Indian legend of the, 3313  
 Steadfast (the) tin soldier, 2306  
 Store (the) that never grew less, 3208  
 Story (the) that had no end, 4222  
 Strongest (the) thing, 4223  
 Thief (the) and the dog, 3852  
 Thief (the) who turned policeman, 5073  
 Three (the) bears, 1187  
 Three (the) little pigs, 4219



# INDEX

- Stories**, Three (the) maidservants, 2096  
 Three nights in the enchanted castle, 558  
 Tiger (the) and the traveller, 5421  
 Tiger woman (the) of the jungle, 5316  
 Tom Thumb, 706  
 Tortoise (the) and the eagle, 3062  
 Town (the) mouse and the country mouse, 3124  
 Travellers (the) and the bear, 4274  
 Treasure (the) of Rhampsinitus, 1906  
 Treasure (the) of the poor, 2742  
 Trial (the) of the spy, 4281  
 Twelve dancing princesses, 328  
 Two (the) friends, 5312  
 Two (the) frogs, 3508  
 Two (the) loaded asses, 2141  
 Ugly dog (the) that became an angel, 5306  
 Ugly duckling, the, 1678  
 Uncama's adventure, 5349  
 Unhappy king (the) of Persia, 816  
 Vase (the) from the Arabian Sea, 556  
 Villager (the) and the viper, 3310  
 Wandering Jew, the, 820  
 Wandering shepherdess (the) of the moors, 2095  
 Warning (a) to dancers, 2301  
 Wasps (the) in the honey-pot, 5520  
 Water (the) of life, 4373  
 Web (the) of cloth, 5344  
 When did you last see your father? 4806  
 When the blind led the blind, 1982  
 When the monks turned burglars, 4639  
 White cow, the, 2744  
 White lady (the) of Longnor, 465  
 White (the) lily, 1068  
 William Tell, 1674  
 Willow-pattern plate, the story of the, 329  
 Wind (the) and the sun, 3853  
 Wind (the) sings down the chimney, 5342  
 Wise (the) and foolish fairies, 4223  
 Wisest (the) maid in Wessex, 2302  
 Wishing table, the, 1904  
 Witch (the) of the forest tree, 710  
 Witch's (the) ring, 464  
 Wizard's (the) castle in the air, 1110  
 Wolf (the) and the crane, 560, 877  
 Wolf (the) and the kid, 2141, 2939  
 Wolf (the) and the lamb, 1793  
 Wolf (the) in sheep's clothing, 463, 2303  
 Woman (the) and the empty cask, 3853  
 Wonder (the) book, 5652  
 Wooden (the) daughter of Descartes, 3210  
 Wooden (the) homes of Tunbridge Wells, 1109  
 World (the) on a table, 5206  
 Yellow (the) dwarf, 1050  
**See also Books — Child's Story of Famous Books**  
**Stork**, pictures, 51, 1953, 1955, 1957  
 what kind of bird it is, 1954, 1955  
**Stormy petrel**, and picture, 1626, 1627  
**Story, Julian**, an artist, 4842  
**Story, William Wetmore**, sculpture of, 4842  
**Story**, that had no end, 422  
**Story-tellers**, great men, 1725  
 great women, 2591  
**Stove**, the Franklin, 2667  
**Stowe, Mrs. Harriet Beecher**, home, a picture, 2045  
 life and work, 1483; with portrait, 2044  
 pictures, 1475, 2043  
**Strafford, Earl of**, life, 1888, 1892  
 pictures, 1896, 1896  
**Strains**, how to cure them, 3397  
**Straparola, G. F.**, wrote fairy tales, 1467  
**Strassburg**, town, 2528, 2754  
**Stratford**, Roman name, 198  
**Strathcona, Lord**: see Smith, Sir Donald  
**Strauss, Johann**, composer, 3252  
**Straw**, how to support a coin on straws, and picture, 98  
 what to do with a bundle of, 5451  
**Strawberry**, contains much water, 1169  
 how its fruit is made up, 4110  
 how to grow, 3616, 3726, 3922  
 strawberry fields, pictures, where it is grown, 641  
**Strawberry tree**, its family, 4112  
**Strawboard**, what it is, 333  
**Stream**, its current, 4231  
**Street**, what is wrong? puzzle, 4766  
**Stretching**, why we stretch, 778  
**Stringed instruments**, vibration, 4913  
**Strong, J.**, rescued from slavery, 4646  
**Strongest thing**, fable, and picture, 4223  
**Strong-room**, description of safe-deposit vaults, with pictures, 5371  
**Strutt, Hon. M. J.**, and radium, 638  
**Stuart, Charles Edward**, attempted to become king, 1023, 1496; portrait, 1498  
**Stuart, Gilbert**, life and art, 4148  
 pictures by, 4153  
**Stuart, James Francis Edward**, claimed the throne, 1029  
**Stuart, J. M.**, explorer, and portrait, 356  
**Stuart, Ruth McNairy**, sketch of, 2050  
**Stuart kings**, helped by Louis XIV., 2070  
 times of the Stuarts, 1021  
**Sturgeon**, fish, and picture, 201, 203  
**Sturgeson, Wm.**, his electro-magnet, 2121  
**Sturt, Charles**, explorer, 356; portrait, 357  
**Stuyvesant, Peter**, as governor, 521  
 portrait, 519  
**Submarine**, based on the laws of equilibrium, 3838  
 description, with pictures, 5585  
 invented by Fulton, 2471  
 picture, 2471  
 toy submarine, and picture, 3387  
**Submarine mines**, picture, 4435  
**Sucker**, how to make a leather sucker, 936  
**Sucking fish**, 207  
**Sudan**, its history, 4258  
**Suevia**, steamship, picture, 1368  
**Suez, Isthmus of**, its use in the past, 4251  
**Suez Canal**, made Africa an island, 3004  
 time taken to construct, 4253  
**Sugar**, chief muscle food, 2626  
 cultivation of sugar-cane, 693  
 manufacture of, pictures, 694, 698  
 produces alcohol, 1872  
 sugar and salt, story, 5082  
 used instead of salt, 5622  
 valuable crop of the U. S., 2422  
 where Demerara is produced, 1878  
 where it comes from, picture in colour, face 692  
 why does it dissolve quicker in hot water than in cold? 5578  
 why it is a good food, 2100, 2699  
 why it tastes sweet, 4230  
 why red drops come when sugar is held to the gas, 3380  
**Suggestion**, influence on actions, 5135  
**Sulaiman Mountains**, 3932  
**Suleiman the Magnificent**, 3156  
**Sulla**, great Roman leader, 417, 5265  
**Sullivan, Sir Arthur**, composer, 1996  
 story of his life, 3252; portrait, 3243  
**Sully, Duc de**, minister of Henry IV., 2070  
**Sulphates**, how they are formed, 1798  
**Sulphur**, non-metallic element, 1290  
 tarnishes silver, 1776  
 unpleasant smell when burnt, 1572  
**Sulphuric acid**, a strong acid, 1801  
 how it is formed, 1798  
 its specific gravity, 3816  
**Sulphuric ether**, very mobile, 2505  
**Sultan**, how he found an honest man, 2745  
**Sultana raisin**, comes from Turkey, 642  
**Sumac**, poison, 4494, 5626; pictures, 4493, 5623  
 staghorn, 4494, 5442; picture, 5437  
**Sumerians**, people of Mesopotamia, 4974  
**Summer**, why summer is hot, 411, 3032  
**Summer-chafer**, insect, picture, 3261  
**Summer-house**, and picture, 4561  
**Sumter, Thomas**, called the "Game Cock," 990  
**Sun**, causes rivers to move, 5024  
 centre of the solar system, 1942, 1943  
 distance from the earth, 1578  
 distance from the planets, 2424  
 does not put out fire, 1372  
 does not rise and set, 77  
 eclipse of, 1863, 2086  
 height of objects calculated by, 2224  
 helps to supply nitrates to plants, 3341  
 how a comet travels round it, 2496  
 how important it is to us, 3, 230  
 how it fades things, 3235, 4548  
 how it gets its heat, 4437  
 how its energy is degraded, 4367  
 how its heat is kept up, 3431  
 how much larger than the earth it is, 541

# INDEX

**Sun**, how the heat of the sun affects us, 4180  
 how was it discovered that the sun is bigger  
 than the earth? 5686  
 its light is stopped by the air, 3691  
 its light passes through clouds, 1573  
 its movements, 4438  
 its rays through ice, 4179  
 its tides, 33, 36, 2280, 2281  
 lights the moon, 2219  
 losing heat, 1370, 2283, 4120, 5044  
 magnetism in the sun, 5254  
 meteors travel round the sun, 2500  
 nearest the earth in winter, 3240  
 not hotter through glass, 2880  
 no water in the sun, 3382  
 shines all night in Norway, 3600  
 some names of the sun, 2234  
 the sun and his family, 143  
 what it is made of, 5023  
 what it owes its heat and light to, 421  
 why it is brighter at noon, 3689  
 why it makes the skin brown, 3760  
 why it shines during rain, 4549  
 why men thought it was moving, 78  
 why become cold, 1367  
 wonder of the sun, 2081

## Pictures

distance across the sun's face, 542  
 eclipse of the sun, 1862, 1865  
 flames of the sun, in colour, 2087  
 its rays, 5039  
 men worshipping the sun, 83  
 rays passing through slab of ice, 4179  
 shining at midnight in Norway, 3591  
 sun and his children, 151  
 sun, moon, and the tides, 32  
 sun's crown of life, in colour, 2085  
 the sun and his family, face 143  
 with other worlds round it, 3  
**Sun-baths**, taken as cures, 1909  
**Sun-bird**, resembles humming-bird, 1745  
**Sunday**, what the word means, 83, 4532  
**Sundew**, feeds upon insects, 3539, 5031  
 pictures, 3541, 5030  
**Sun-dial**, how to make one, and plans, 1285  
 picture, 1539  
**Sunflower**, perennial plant, 572, 4112  
**Sunlight**, boxful of sunlight, 2357  
 how clouds stop sunlight, 3385  
 how corn-lands are fed with the sunshine of  
 the past, 3343  
 how we can see sunlight, 3688  
 how we dig up sunshine, 799  
 kinetic energy from sunshine, 3552  
 necessary for plants, 229  
 stored by plants, 1267  
 strongest power in the world, 286  
 what makes its colours, 426

## See also Sun

**Sun-spots**, proving the sun moves, picture, 2801  
 their cause, 3241, 5254  
 what is known of them, 2083  
**Superior Lake**, 1240; picture, 29  
**Superstitions**, how stupid they are, 1271  
**Supreme Court, The United States**, its powers,  
 1597  
**Surajah Dowlah**, story of his cruelty, 1704  
**Surat**, English factory set up, 1702  
**Surface tension**, 1778, 1779  
**Surgeon's Daughter, The**, story, 1495  
**Surinam toad**, how it carries eggs, 1224  
**Surrey, Earl of**: see Poetry Index  
**Surrey**, meaning of name, 5388  
**Susa**, remains of palaces, 5060  
 taken by Alexander the Great, 5065  
**Suspension bridges**, with pictures, 20, 26, 3695  
**Suttee**, custom among Hindoos, 1550  
**Suvorov, Alexander**, Russian general, 3631  
**Sverdrup, Otto**, portrait, 4725  
**Sverre**, fought against the Baglers, 3594  
**Swallow**, 1740, 2210, 2212  
 pictures, 51, 1744, 2209, 2211  
**Swallowtail butterfly**, 2992; picture, face 2982 in  
 colour  
**"Swamp Fox,"** sobriquet of Francis Marion,  
 985, 990  
**Swan, Joseph Wilson**, worked on electric-lamp,  
 658  
**Swan**, 1513, 1522, 2328; picture, 1521

**Sweat**, what it is and does, 1911, 3690  
**Sweden**, attacked Brandenburg, 2530  
 claimed Pomerania, 2528  
 flag, picture in colour, face 1640  
 history and geography, 3591  
 pictures, 3591, 3597  
 war with Russia, 3028  
**Swedenborg, Emanuel**, his vision, and por-  
 trait, 4622, 4625  
**Swedish Nightingale**, the, nickname of Jenny  
 Lind, 5495, 5497  
**Sweep**, boy sold to, picture, 3697  
**Sweetbread**, pancreas, used as food, 2346  
**Sweet chestnut**, pictures, 1970, 3652  
**Sweet gale**: see Myrtle, bog  
**Sweetgrass**, floating, and picture, 1339  
**Sweet-gum**, description, 5624; picture, 5627  
**Sweet marjoram**, description, 4289; picture, 4291  
**Sweet pea**, how to grow, 927, 1509  
 its structure, 5269; picture, 5274  
**Sweets**, how to make sweets, 3512  
**Sweet vernal grass**, and picture, 1342  
**Sweet-william**, 719, 3278, 5270  
 in colonial times, 948  
**Sweyn**, king of Denmark, 3594  
**Swift, Jonathan**, famous writer, 2540  
 life, 1728; portrait, 1725  
 wrote Gulliver's Travels, 1309  
**Swift**, bird, and picture, 2211, 2212  
**Swift land crab**, lives on the beach, 2586  
**Swimming**, brave boy's remarkable swim, 4070  
 how to swim, and pictures, 3818, 3819  
 why easier in salt water, 1993  
**Swimming crab**, 2584  
**Swiss Alps**, picture, 2959  
**Swiss Family Robinson, The**, story of the  
 book, and pictures, 1915  
**Swiss Guards**, defence of Tuilleries, 1804, 2272  
**Switchboards**, of the telephone, 350  
**Switzerland**, became independent, 2527  
 description of, with pictures, 5669  
 education, 2968  
 history, 2962  
 how it looks in winter, 2512  
 its flag, 2968; picture in colour, 1640  
 map, 2967  
 map of part of, 5670  
 physical features, 2959  
 pictures, 2512, 2961, 2965  
 railways and industries, 2968  
 roads made by Napoleon, 2276  
 ruled by Austria, 120  
**Sword-bill humming-bird**, its beak, 1740  
**Swordfish**, 1086; pictures, 51, 1085  
**Sword lily**: see Gladiolus  
**Sycamore tree**, and picture, 3188  
 See also Buttonwood  
**Sydney**, New South Wales, 1356, 1360  
**Sydney, W. S.**, centre of coal industry, 5601  
**Symbol**, what it is, 1370  
**Symington, William**, built a successful steam-  
 boat, and portrait, 2467, 2470  
 his steamboats, pictures, 2469  
**Symmer, E.**, discoveries in electricity, 2118  
**Sympathetic vibration**, what it is, 4915  
**Sympathy**, does it help us? 5639  
 influence on actions, 5135  
**Syphon**, how a syphon works, 679  
 how it is made, 590  
 how water flows upwards, picture, 580  
 why it will empty a glass of water, 3947  
**Syphon barometer**, picture, 3943  
**Syr Daria**, river, 3932  
**Syria**, conquered by the Arabs, 3876  
 part of Asiatic Turkey, 3873  
 railways, 3882  
 ruled over Palestine, 117  
 wars with Mesopotamia, 4974  
**Szechuen**, province of China, 116

## T

**Tabb, John Banister**: see Poetry Index  
**Tablecloth**, how to make a stencilled table-  
 cloth, and pictures, 1921  
**Table Mountain**, picture, 1767  
**Table-square**, in ribbon-work, 2133  
**Tacitus**, a great historian, 528  
**Tadousac**, fur-trading post, 3619, 5428  
**Tadpole**, young frog, 662, 1224, 2456, 4234

# INDEX

- Taft, William H.**, administration, 3538  
as president, 2418  
first governor of the Philippines, 2184  
picture, 3532
- Tagus River**, 3352
- Tahiti**, young ladies, picture, 1463
- Talliezer**, a Norman minstrel, 591, 2084
- Tailor bird**, sews its nest, 2216
- Taiyap rebellion**, 114
- Taj Mahal**, tomb, 1550, 1700, 1702  
pictures, 1551, 2457
- Takin**, newly discovered, 5573
- Talavera**, battle of, 3360, 4384
- Talegalla**, name for brush-turkey, 1530
- Tale of Two Cities, A**, story of novel, 2435
- Talisman**, *The*, story of the novel, 1494
- Tall fescue grass**, picture, 2979
- Tallow dip**, and the black salt, story, 481
- Talmud stories**, bear in the well, and picture, 4934  
dinner at the inn, and picture, 5159  
emperor and figs, and picture, 4935  
heir and the will, and picture, 5159  
king's watchers, and picture, 4935  
rich man's diamond, and picture, 4934
- Tamarisk**, picture, 5187
- Tamer River**, mouth, picture, 4436
- Tamerlane**: see *Timur*
- Taming of the Shrew**, story of play, 635
- Tamworth**, meaning of name, 5359
- Tanagra figures**, 5128
- Tancred**, in the First Crusade, 1587
- Tanganyika Lake**, 284, 4263
- Tangier**, Moroccan port, with picture, 4255
- Tangrams**, little black, 5525
- Tannia**, in tea, 3316
- Tanning**, the process described, 745, 904
- Tansy**, has tubular corolla, 4112
- Tantalus**, how he was punished, 4532
- Taoism**, what it teaches, 2998
- Tapayaxia**, horned lizard, 1220
- Tara Hill**, abandoned, 5463  
picture, 5466
- Taranaki**, province in New Zealand, 1463
- Tarantula**, spider, 3303; pictures, 3301
- Tarentum**, battle of, 5262
- Tarim River**, 3932, 3934
- Tarleton, Banastre**, at Cowpens, with picture, 992  
picture, 981, 991
- Tarpon**, fish, with picture, 206, 208
- Tarquín the Proud**, king of Rome, 413
- Tartar**, on teeth, 2100
- Tartarin in the Alps**, story of the book, and pictures, 4655
- Tartarin of Tarascon**, story of the book, and pictures, 4536
- Tartars**, invaded Russia, 3626, 3934  
invaded Western Asia, 3878  
Tartar women, picture, 3939
- Tashkent**, town in Russia, 3753
- Tasman**, Abel Jans, explorer, 1355
- Tasmania**, how races have been wiped out, 3076  
island of Australia, 356, 1362  
once joined to Australia, 3006
- Tasmanian devil**, with picture, 862, 865
- Tasmanian wolf**, picture, 865
- Tasso**, Torquato, Italian poet, 1587
- Taste**, depends largely on habit, 3089  
how tastes can be classified, 4629  
smell and taste, 4627
- Tate, Nahum**, wrote hymns, 568, 1997
- Tatler, The**, newspaper, its history, 4676
- Tay Bridge**, 20; pictures, 28, 296
- Taylor, Anne and Jane**: see *Poetry Index*
- Taylor, Bayard**: see *Poetry Index*
- Taylor, Benjamin**: see *Poetry Index*
- Taylor, Jeffreys**: see *Poetry Index*
- Taylor, Howland**, died for his faith, 5068
- Taylor, Zachary**, administration and death, 3536  
death, 2009  
in Mexico, with picture, 1832  
picture, 3532
- Tea**, best way to make it, 3316  
effect on the body, 3113, 3315  
preparation for use, and pictures, 88  
taxes on, 862  
tea-plant, picture, 3315  
why sugar absorbs it, 100
- Tea-cloth**, dainty afternoon, 5449  
how to make, and pictures, 2351
- Tea-party**, how to prepare for, 3284
- Tears**, their use, 424, 2453  
where they come from, 4218  
why people cry when hurt, 424  
why they are salt, 780
- See also Crying**
- Teasel**, catching insects, pictures, 3541
- Tecumseh**, attack on Detroit and death, 3901  
killed, 1821
- Teeth**, formation and growth, 1962, 1988, 2097  
how the teeth grow, picture, 2097  
how they differ in animals, 3046  
teeth of human beings, picture, 2099  
why our teeth chatter, 4439
- Teheran**, town, pictures, 3877
- Tehuantepec**, an isthmus, 4381  
natives, picture, 4387
- Telegraph**, Central Telegraph Office, picture 3523  
first real telegraph, picture, 4312  
how a telegram is conveyed, 1421  
how a wireless telegram is sent, and pictures, 3526  
how it was carried across the seas, 2474  
how we send a telegram, and pictures, 3519  
invented, 2668, 3535  
telegraphs to the stars, picture, 1943  
telegraphy started, 1099  
the makers of telegraphs, 4313  
why telegraph lines hum, 1868  
why wires go up and down, 3091
- Telegraphing thought**, and pictures, 102
- Tel-el-Amarna tablets**, 4976, 4984
- Tel-el-Kebir**, battle of, 4258
- Telemachus**, monk, 627
- Telemachus**, son of Ulysses, 68
- Telephone**, an easy way to make a telephone, and pictures, 231  
how it works, 4180  
telephone receiver, picture, 4313  
that a boy can make, 5528  
the makers of telephones, 4313  
the wonder of the telephone, and pictures, 349
- Telescope**, Galileo's invention, 1660, 1943  
how to make, and picture, 3725  
its use, 147, 1949  
Lick observatory telescope, picture, 1947
- Telford, Thomas**, built Gota Canal, 3600
- Tell, Wm.**, and his son, pictures, 1675, 2961  
Swiss patriot, 120, 1674, 2968
- Temperature**, discovery through pulse, 3972  
heat and temperature, 4473  
how it is regulated, 1912  
the two scales of temperature, 3671  
what it is, 4370
- Tempest, The**, Shakespeare's play, 315
- Temple of Heaven**, Peking, picture, 2997
- Temple of Solomon**, its building, 5124
- Tench**, a fish, with picture, 2679, 2681
- Tendon**, part of a muscle, 2625
- Tennessee**, admitted, 3533  
secedes, 2012, 3536  
settlement and admission, 1822  
slave state, 2010
- Tenniel, Sir John**, Bismarck cartoon, 2756
- Tennyson, Alfred, Lord**, his life, 3910  
pictures, 3907, 3911  
poems: see *Poetry Index*  
portrait bust of, 4848
- Tennyson-Turner, C.**: see *Poetry Index*
- Tenochtitlan**, capital of Mexico, 4382
- See Mexico, City of**
- Tensile strength**, what it is, 3695
- Ten-week stocks**, 5270; picture, 5276
- Teredo**, a worm, with picture, 2689  
damages timber, 2587
- Terhune, Mrs. Mary V. H.**, life, 2046
- Termite**, ant, with pictures, 2949, 2950
- Tern**, bird, with pictures, 1629, 1630, 1790
- Terra-cottas**, the Tanagra figures, 5128
- Terror, Mount**, discovered by Ross, 4730
- Tertiary colours**, what they are, 2654
- Tessellated pavements**, 3256
- Tetrabelodon's skull**, picture, 3679
- Te-umman**, king of Elam, 4980
- Teutons**, invaded Europe, 2521, 2851, 2962, 3592
- Tewin Churchyard**, 1673

# INDEX

**Tewkesbury**, battle of, 2533  
 meaning of name, 5389  
**Texan War**, 4390  
**Texas**, admitted, 1830, 3535  
 as republic, 1828  
 pictures, 2307, 2311, 2312  
 secedes, 2010, 3536  
 treaty annexing, 3535  
 union with United States, 4388  
**Thackeray, W. M.**, his life, 2311  
 poems: see Poetry Index

## His Books

Henry Esmond, 3265  
 Pendennis, 3473  
 The Newcomes, 3603  
 The Virginians, 3363  
**Thales**, discovery about amber, 2113  
 drew maps of the stars, 1655  
 ideas of motion, 3469  
**Thames River**, its traffic, 2076  
 pictures, 36, 2076  
 size in olden times, 192  
**Thames Tunnel**, built by the Brunels, 616  
**Thanet, Isle of**, 198  
**Thatch**, names derived from, 4908  
**Thaxter, Celia**: see Poetry Index  
**Thebes**, capital of Boeotia, 5124, 5130  
 defied Sparta, 1304  
 its statues, 4160; picture, 4163  
**Thebes, Mount**, 5077  
**Theebaw**, king of Burmah, 1880  
**Theed, W.**, Albert Memorial work, 5004  
**Theine**, same as caffeine, 3316  
**Themistocles**, 1302, 5129; portrait, 5121  
**Theodora**, wife of Justinian, picture, 3153  
**Theodosius, Emperor**, 3982  
**Theology**: see Christianity and Religion  
**Theophilus, Emperor**, picture, 3153  
**Thermo-dynamics**, what it deals with, 4366  
**Thermometer**, a measurer of heat level, 4370, 4473  
 how made, 4371; with pictures, 4370, 4371  
 invented by Fahrenheit, 3864  
 use of mercury, 1294  
**Thermopylae**, battle, 1301, 5062  
**Thermos flask**, what is a, 5573  
**Theseus**, Greek statue, 4160  
**Thespians**, drove back the Persians, 1302  
**Thessaly**, 3149, 3220  
**Thian Shan Mountains**, 3931  
**Thief**, catching a thief, story, 2143  
 how the thief was found out, story, 4933  
 thief and dog, fable, and picture, 3852  
**Thigh-bone**, strongest in the body, 2546  
**Thimble**, what it is, 4605  
**Thimnier, Barthémy**, improved sewing-machine, 1621  
**Things**, are there any two things exactly alike in the world? 5382  
 right way to do simple, 5523  
 twenty-five ways of saying the same thing, 5457  
**Thinkers**: see Thought  
**Third Estate** of France, 2268  
**Thirteen**, number, superstition, 1271  
**Thirteenth Amendment**, forbidding slavery, becomes a part of the Constitution, 2022  
**Thirty Years' War**, 2966  
**Thistle**, garden varieties, 5271  
 how it was taken to Australia, 3827  
 pattern of thistle leaves, picture, 3975  
 Scottish emblem, 3082  
 thistle-down, picture, 2321  
 See also Flame-thistle  
**Thomas, General**, at Quebec, 3898  
**Thomas, George Henry**, at Chickamauga, 2018  
 nearly destroyed General Hood's army, 2020  
 picture, 2017  
**Thomas, apostle**, 2330  
**Thomas**, names derived from, 4752  
**Thomas, St.**, converted Finland, 3630  
**Thomas the Rhymor**, how he charmed the goblin, with picture, 2377  
**Thompson, David**, discoveries of, 5147  
**Thompson, General**, repulsed in Canada, 3898  
**Thompson, Foullett** (Lord Sydenham), as governor, death, 4098  
**Thompson, Sir John**, death, 4106

**Thompson-Seton, Ernest**, organiser of the Boy Scouts, with picture, 3583  
**Thomson, James**, poems: see Poetry Index  
 portrait, 3737  
 supposed to have written Rule, Britannia, 3738  
**Thomson, Sir J.**, his inventive mind, 4943  
 on gravitation, 3548  
**Thor**, god of thunder, 428, 4533  
 the name Thursday derived from his, 86  
 trying to drain the horn, picture, 4133  
**Thoreau, Henry**, his life, 1484  
 pictures, 1475, 1485  
**Thorn**, how to remove from fingers, 3397  
 the enchanted thorn, story, 1677  
**Thorn-apple**, description, 4495  
 fruit, 4491  
**Thorn-back crab**, 2584  
**Thorn-back skate**, picture, 2449  
**Thornycroft, Hano**, a sculptor, 4162  
 his Cromwell statue, 4168  
**Thoroughwort**: see Boneset  
**Thorpe, Rose H.**: see Poetry Index  
**Thorwaldsen, Bertel**, a sculptor, 1804, 4162  
**Thothmes III.**, king of Egypt, 4786, 5003  
**Thought**, effect of feeling, 5028  
 famous thinkers, 211, 4617  
 figures expressing thought, pictures, 5025  
 how thoughts can be read, 5251  
 how to think, 5025  
 learning to think, 5019  
 mystery of telegraphing, 102  
 not the quickest thing in the world, 4116  
 we are always thinking, 5020  
 we think chiefly in words, 1367  
 what a thought is, 1366  
 what happens when we think, 4939  
 what makes us think, 1365  
 where thoughts come from, 1365  
 where thoughts go when we sleep, 1365  
**Thought-reading**, by cards, and picture, 2259  
**Thousand**, its meaning, 1932  
**Thousand Islands**, description of the, 5425  
**Thrace**, province, 3224, 5130  
**Three bears, The**, story, and picture, 1187  
**Three Fates, The**, a Greek statue, 4160  
**Thresher shark**, 2444; picture, 2445  
**Threshing-machine**, invented, 2668  
 picture, 4087  
**Thrift**: see Sea-pink  
**Throat**, a lump in the throat, 4602  
**Throgmorton, Elizabeth**, wife of Sir Walter Raleigh, 5395  
**Throwing light**, game, 2573  
**Throwing the baseball**, game, 1614  
**Thrush**, 2068, 2328; pictures, 51, 2065  
**Thrym**, how he was deceived by Thor, 87  
**Thumb**, how it is formed, 2545  
**Thumbeline, Little Tiny**, story, and pictures, 3499, 3500  
**Thun**, city of, 5670  
**Thun, Lake**, in Switzerland, 2960  
**Thunder**, cause of sound, 1575, 333, 4583  
 why it follows lightning, 777  
 why we feel hot before thunder, 1641  
**Thunderbolts**, 3093  
**Thunderer fish**, gives electric shocks, 2451  
**Thursday**, how it got its name, 86, 428  
 meaning of name, 4533  
**Thyme**, how to grow thyme, 3176  
 picture, 4611; wild, 4616  
**Tiber**, a famous river of Italy, 3012  
**Tiberias**, Christians defeated at, 1589  
**Tiberius Oesar**, and picture, 528  
**Tibet**, its history, 3936  
 map, 3933  
 pictures, 3931, 3937, 3939, 3940  
 where it is, 3932  
**Ticino River**, its course, 2960  
**Tickling**, and laughter, 4443  
**Ticks**, insects, 3304; pictures, 3297  
**Ticonderoga**, battle of, 885  
**Tides**, effect on earth's movement, 37  
 in olden days, 34, 311  
 in the earth's crust, 3008  
 made by sun and moon, 33  
 the sun has tides, 37  
 the wonder of time and tide, 2279  
 what they leave behind, picture, 1413  
 where the water goes at low tide, 3382  
 why there are two tides a day, 3978  
**Tientsin**, port of Peking, 114

# INDEX

- Tierra del Fuego**, its discovery, 4499  
its natives, 3676  
why so called, 4500; picture, 4499
- Tiflis**, capital of Georgia, 3631, 3752
- Tiger**, and the traveller, a story, 5421  
how to make a stuffed tiger, 716; with pictures, 714, 715  
its jaws and teeth, 2097  
tiger with teeth like swords, picture, 44  
tigers, pictures, 133, 153  
unspoken language of, 5324  
what its tongue is like, 2207  
what kind of animal it is, 135  
why it can see in the dark, 153
- Tiger beetle**, with picture, 3261, 3264
- Tiger Lily**, 5271; picture, 5279
- Tiger moth**, picture, 3394
- Tiger woman**, of the jungle, story, 5316
- Tiglath Pileser I.**, king of Assyria, 4977
- Tiglath Pileser III.**, his reign, 4978
- Tigris**, river in Mesopotamia, 3873, 4971
- Tilden, Samuel J.**, defeated candidate, 3537  
dispute regarding his election to presidency, 2417
- Tillus**, the Athenian, 1301
- Tilly, General**, 2528
- Tilist, peace of**, 2276
- Tilton, Theodore**: see Poetry Index
- Timber**: see Wood
- Timber hitch**, and picture, 3283
- Timbuktu**, centre of caravan traffic, 4254
- Time**, how it is reckoned, 677  
how men first told the time, picture, 1538  
how men measured time by the sun, picture, 1539  
how to measure time, 3669  
how to tell time by the clock, 1542  
the wonder of time and tide, 2279  
what Greenwich time is, 3036
- Times, The**, newspaper, 3574
- Timocharis**, studied the heavens, 1656
- Timon**, censured Euclid, 4618
- Timur**, last of the great Mongol rulers, 112  
led the Tartars, 3878  
ruled his empire from Samarkand, 3935
- Tin**, its specific gravity, 3816
- Tinder**, used for kindling fire, 653, 775
- Tinder-box**, **The**, story, and pictures, 4126, 4127
- Tin soldier**, the steadfast, story, 2305
- Tintoretto**, artist, his life, 1260
- Tip-cat**, game, 724
- "Tippecanoe and Tyler Too!"** origin of political cry, 3535
- Tippler pigeon**, 2216
- Tiredness**, how it affects digestion, 3110  
of metals, 5486  
why we get tired, 423, 1861
- Tires**, invention of pneumatic, 5673
- Tissaphernes**, Persian general, 5076
- Tisty-tosty**: see Guelder Rose
- Tissa River**, waters Hungary, 2860
- Titian**, employed by Philip II., 5499  
his life, 757  
his work as a painter, 4587  
how he treated Tintoretto, 1260  
pictures, 759, 1259  
pictures by, 761, 4590  
studied under Bellini, 1256
- Titicaca Indians**, picture, 4503
- Titicaca, Lake**, height above sea-level, 4572  
in the Andes, 4498  
iron will not rust in its waters, 4572  
picture, 4497
- Titmice**, birds, 2216; pictures, 2217
- Tit, tat, toe**, game, 2572
- Titus, Arch of**, monument, 5005, 5268  
picture, 5012
- Titus Aurelius Antoninus**, emperor of Rome: see Antoninus Pius
- Titus Flavius Sabinus Vespasianus**, built the Coliseum, 5268  
his reign, 531, 5005  
picture, 532
- Titulus**, tortured, picture, 4956
- Tiverton**, meaning of name, 5389
- Tiw**, Saxon god of war, 4532
- Toad**, life-story, 1223, 1224, 2327  
pictures, 51, 1223 in colour, 3885
- Toad's Mouth**, rock, picture, 1059
- Tobacco**, effect on the body, 3318  
first grown and smoked in England, 5394
- Tobacco**, laws against children smoking, 3320  
plant, picture, 3315  
production of in U. S., 2422, 2665
- Toboggan**, how to make, and picture, 2349  
in Canada, 5210  
tobogganing, picture, 2513
- Toe**, how the great toe should move, 2546  
not necessary for walking, 2454  
why we have toe-nails, 1966
- Toffee**, how to make, 2439
- Togo, Admiral**, 368
- Tollers of the Sea, The**, story of the book, and picture, 4171
- Toilet cover**, how to make huckaback toilet cover, with pictures, 4773
- Toilet tidy**, with pictures, 2872, 4353
- Tokio**, capital of Japan, 370
- Tolbooth prison**, Edinburgh, picture, 2803
- Toledo**, town in Spain, 3352, 3361
- Tolstoy, Count Leo**, 3754
- Toltees**, American tribe, 4384
- Tom Brown's Schooldays**, story of the book, 4063
- Tom Thumb**, story, and picture, 706
- Tom Tiddler's ground**, game, 724
- Tomatoes**, how to grow, 3398, 3514, 3922
- Tombs**, discovered in Egypt, 5100, 4780, 4786  
paintings on tombs, pictures, 4792, 5099
- Tommy Toe-biter**, tadpole, 1224
- Tomak**, near the Siberian railway, 3752
- Tomtit**, its habits, 2216  
pictures, 51, 1741, 1744, 2217
- Tonga**, young lady, picture, 1463
- Tongue**, connection with taste, 4628  
its work, 2207  
showing the taste buds, picture, 4629
- Tonty**, companion of La Salle, 264
- Tool-box**, how to make, and picture, 339
- Tools**, how to clean tools, 4456  
that a boy carpenter wants, 337
- See also Names of Tools**
- Tooth-powder**, best kind to use, 2100
- Toothwort**, description, 4418  
picture, 4416
- Top**, its spinning power, 684  
tops, showing equilibrium, picture, 3669
- Toplady, Augustus Montague**, portrait, 1999  
wrote Rock of Ages, 2000
- Topsy-turvy railway**, 2230
- Torbay**, the brave diver of, story, 3254
- Torch**, how men made, long ago, 653
- Torch Lily**: see Red-hot poker
- Tories**, during American Revolution, 984, 1388
- Toronto**, captured, 1399  
former capital of Canada, 4100  
town in Canada, 1242
- See also York**
- Torpedo**, name for electric ray, 2448
- Torpedoes**, fired by submarines, 5591
- Torquemada**, noticed that Mexican Indians used rubber, 5677
- Torrens, Lake**, discovered by Eyre, 357
- Torres**, explored Australia, 1355
- Torres Straits**, north of New Guinea, 1466
- Torres Vedras**, lines of defence, 3360
- Torricelli, Evangelista**, discovered secret of atmosphere, 3942; pictures, 3943
- Tortoise**, does not eat black-beetle, 5524  
hare and the tortoise, fable, 462  
how the lammergeier treats it, 1843  
length of life, 2327, 2328  
pictures, 51, 507  
sleeps all winter, 506  
tortoise and the eagle, fable, 3062  
tortoises as pets, 5114
- Tortoiseshell butterfly**, with picture, 2985
- Tory**, name for the Conservatives, 2336
- Tostig**, set fire to old Scarborough, 1320
- Toucan**, bird, 1746; picture, 1743
- Touch**, can a blind man's touch take the place of his sight? 5486  
the sense of touch, 1964, 3720
- Touch**, game, 574
- Touch-me-not**, picture, 4838
- Toulon**, siege of, 4355
- Toulouse**, town in France, 2398
- Tours**, battle of, 2064  
called the Garden of France, 2399
- Toussal, Edward**, saved St. Heller, 1063
- Tower**, how to make with reels, 4352

# INDEX

- Tower Bridge**, London, how it opens, 20  
picture, 27
- Tower of Babel**: see Babel, tower of
- Tower of London**, imprisonment of little  
princes, 1880  
picture, 1159  
the men who built the Tower, 1158
- Town**, how the children saved the town, story,  
964
- Towton**, battle of, 2918
- Toys**, how to mend, 4249
- Tozer**, Bishop, work among slaves, 3489
- Trachea**, the windpipe, 2051
- Trades**, names derived from, 4908
- Trade winds**, what they are, 4182
- Tradition**, what it means, 2802
- Tralfagar**, battle of, 1095, 2276, 3360, 4362  
picture, 1082
- Tralfagar Square**, Nelson Column, with pic-  
ture, 5004, 5011  
picture, 1165  
story of its making, 1166, 4362
- Tragedy**, what it is, 473
- Tragopan**, pheasant, 1515; picture, 1516
- Train**: see Railway train
- Trajan**, Roman emperor, 531, 5005, 5268  
picture, 532
- Trajan's Column**, in Rome, 532, 5005, 5268; pic-  
ture, 5009
- Tramcar**, drawn by mules, in London, 272
- Trans-Caspian railway**, 3753, 3932
- Transfer patterns**, how to use, 1507, 2133, 3375
- Translation**, its meaning, 3469
- Translucent**, its meaning, 1266, 2622
- Transparent**, its meaning, 1266  
what makes things transparent, 2622
- Trans-Siberian railway**: see Siberian railway
- Transvaal**, 1768, 1770
- Trap-ball**, game, 1614
- Trapdoor-spider**, 3302; pictures, 3299
- Trapper**, hunts animals for fur, 2728
- Traps and Trapping**, in Canada, 4817; with  
pictures, 5147
- Trasimenus Lake**, battle, 5264
- Traveller and the wolves**, game, 724
- Travellers**, and bear, fable, and picture, 4274  
guided by the stars, 1942
- Traveller's lantern**, problem, and picture, 4146,  
4250
- Trawling**, how it is done, 3765  
pictures, 3770
- Treasure of the Poor**, story, and picture, 2742
- Tree kangaroo**, lives in trees, 862
- Tree leopards**, picture, 51
- Tree peony**, 5271
- Tree-pipit's egg**, picture in colour, 1744
- Trees**, all trees flower, 2077  
American, in summer, with pictures, 5621  
American, in winter, with pictures, 5437  
American, with pictures, 4487  
covered with frost, pictures, 4893, 4897  
cross-section of California redwood, 4902  
curious way of measuring a tree, 5666  
flowers die in winter, 5166  
harmful when leaves are plucked, 3093  
height of a tree shown by its shadow, pic-  
ture, 1927  
how a tree is uprooted, and pictures, 744  
how the leaves drink in sunlight, picture, 287  
how they resist gravitation, 3861  
how to measure, 1927, 5295  
how to tell a tree's age, 917  
India-rubber, picture, 5683  
measuring height, picture, 5295  
names derived from trees, 4907  
need for trees, 3077  
of Canada, 5429  
pictures, 3177, 3439  
talks about trees, 3177, 3439, 3649  
trees in the park, puzzle, and picture, 4146,  
4250  
turn into coal, 49, 799, 3073, 3542  
why part grows up and part down, 1572  
why some get blown down, 919  
why the branches grow sideways, 3860  
why the roots grow in the ground, 3860  
why they stop growing, 3979  
why trees grow straight, 3880  
See also Forests
- Trefall**, bird's foot, 4288; with picture, 4287  
hare's foot, 4288; with picture, 4286
- Trench**, Dr. B. C.: see Poetry Index
- Trench**, for boy scouts, how to make, 4032
- Trent**, the, British ship from which Messrs.  
Mason and Slidell were taken, 2014
- Trenton**, battle of, 986
- Tresham, Sir Thomas**, took part in Gunpowder  
Plot, 1792
- Trèves**, oldest town in Germany, 2754
- Trevethick, Richard**, his engine, picture, 613  
made a steam-engine, 610
- Tribunes**, Roman magistrates, 5261
- Tribuno, Pietro**, started building of Campanile  
of St. Mark's, 1252
- Tribute Money**, Masaccio's picture, 4588
- Tricks**, blowing a tumbler from another, 98  
dancing dwarf illusion, 5667  
disappearing penny, 2355  
how to make a windmill, 98  
making a chain from paper, 98  
making electricity with a lemon, 98  
mysterious paper purse, 2566  
mystery of the suspended knife, 5658  
pillars of Solomon, 2870  
robbers and the soldiers, 2766  
simple tricks for odd moments, 5112  
supporting a plate on a pin, 98  
telling numbers by cards, 5660  
the magic tumbler, 2132  
to form a square, 5666  
tricks with dominoes, 4139  
tying two people together, 4462  
with coins, 98  
wizard's pocket-handkerchief, 2488
- Trieste**, port of Austria, 2860
- Trigger-fish**, picture in colour, face 200
- Trinidad**, its pitch lake, 1878
- Trinity Church**, its quietness, 4306
- Tripoli**, belongs to Turkey, 4261  
trouble with, 3533  
war with, 2900
- Tristan d'Acunha**, island, 3324
- Tristram, Sir**, his life, and picture, 3211
- Trojan War**, story, and pictures, 67
- Trolley**, how to make with reels, 4352
- Trollope, Anthony**, 2315; portrait, 2307
- Tromp**: see Van Tromp
- Tromsheim**, town in Norway, 3602
- Tropic bird**, a sea-bird, 1630
- Trott**, the dead heart of Little Trott, story, and  
picture, 3209
- Trout**, fish, 2680; picture, 2679
- Troy**, ruins discovered, 5122  
siege of, 5260  
story of Helen of Troy, and pictures, 67, 1683  
wooden horse of Troy, picture, 71
- Trumbull, John**, life and art, 4148  
pictures painted by, 987, 4153
- Trumpet**, effect on sound, 4584, 5021
- Trumpeter**, a bird, 1958
- Trumpeter pigeon**, 2216
- Truro, Can.**, manufacturing centre, 5601
- Truth**, how truth got to the bottom of a well,  
story, and picture, 3162  
importance of interest in truth, 5028  
the magic pen of truth, story, 2092
- Truxton, Thomas**, in command of the Con-  
stellation, 2900
- Tryon, William**, defeated Regulators, 982
- Tsar**, the girl who saw the tsar, story, 2368  
title adopted by Russian kings, 3626
- Tschaikowsky, Peter**, composer, 3252
- Tsetse-fly**, 3144  
pictures, face 3141, 3147
- Tuatera**, its third eye, 5570
- Tube railways**: see Railways
- Tuberculosis**: see Consumption
- Tube-worms**, picture, 1417
- Tudor kings**, 841, 2706
- Tudor rose**, picture, 3428
- Tuesday**, how it got its name, 3423  
meaning of word, 4532
- Tufted hair grass**, picture, 2982
- Tufted pigmy auk**, bird, 1632
- Tufted-tail porcupine**, 669; picture, 671
- Tug-of-war**, game, 724
- Tulleries Palace**, French royal family impris-  
oned, 2270  
stormed, 1804, 2272
- Tukulti-Adar I.**, king of Assyria, 4977
- Tula**, town in Russia, 3750
- Tulip**, picture in colour, 3727



**Tulips**, the fairy tulips, legend, 3208  
**Tumbler**, how to blow one tumbler out from another, and picture, 98

See also Glasses

**Tumbler pigeon**, 2216; picture, 2213  
**Tumbling tablet**, how to make, and picture, 4034  
**Tunbridge Wells**, the wooden homes of Tunbridge Wells, tale, 1109  
**Tundras**, plains in Russia, 3745  
**Tungshan Desert**, remains of wall, 110  
**Tungusians**, people, picture, 3751  
**Tunicates**, low animal forms, 3677  
**Tuning-fork**, experiment to show difference between high and low notes, 4760  
 its sound when touching wood, 4597  
 sameness of its sound, 4864  
 sound over jug of water, 4915  
**Tunis**, flag, picture in colour, face 1640  
 under French protection, 4261  
**Tun-ii**, in story of Search for a Happy Man, 5689  
**Tunny**, enemy of flying-fish, 207  
**Tupper, Sir Charles**, as premier, 4106  
**Turbit**, pigeon, 2216  
**Turbot**, fish, 206; picture, 206  
**Turcomans**, 1550, 3932; picture, 3939  
**Turkestan**, map, 3933  
 province, 106  
**Turkey**, bird, 1520; picture, 1519  
**Turkey**, Asiatic Turkey: see Turkey in Asia  
 country, rise and decline, 3149  
 flag, picture in colour, face 1640  
 its flag, 3154  
 its government, 3226  
 its railways and industries, 3224  
 peasant's gala costume, picture, 3225  
 signed treaty of Berlin, 3222  
 sultan at first meeting of Parliament, picture, 3219  
 Turkey and the Balkans, 3219  
 Turkish emblem, picture, 3219  
 war with Russia, 3222, 3631  
 with Balkan States, map, 3148

See also Turks

**Turkey in Asia**, 3873, 3882  
**Turkish delight**, how to make it, 3512  
**Turks**, attacked Hungary, 2854  
 besieged Vienna, 2528, 3158  
 conquered Albania, 122  
 conquered the Byzantine Empire, 3154  
 fought with the Persians, 3158  
 gained Asia Minor, 3154, 3878  
 how they gained power in Egypt, 4256  
 invaded Europe, 3933  
 invaded south-western Asia, 3878  
 lost their power in Roumania, 3220  
 obtained power in North Africa, 4261  
 reigned at Delhi, 1700  
 rule in Greece, 1640, 3219  
 ruled the land on the north shore of the Black Sea, 3626  
 their rise to power, 3580  
 treated the Christians cruelly, 1585

See also Turkey and Young Turks

**Turner, C. Y.**, an artist, 4152  
**Turner, Elizabeth**: see Poetry Index  
**Turner, J. M. W.**, painter, 764, 4587  
 picture, The Fighting Téméraire, 4594  
 pictures of Venice, 757, 3017  
 portrait, 759  
**Turner, Joseph**, author of Roll On, Silver Moon, 2953  
**Turnpikes**, game, 4027  
**Turans**, king of the Rutuli, 72  
**Turpentine**, an oil, 38  
**Turtlehead**, description of flower, 5036  
 picture, 5034  
**Turtles**, 48, 207  
**Tuscany**, passed under the power of Austria, 3018  
 region of Italy, 3012  
**Tuskegee**, school for negroes, 2914  
**Twachtman, John W.**, art of, 4152  
**Twain, Mark**, his life, 1487  
**Tway-blade**, description, 4423  
 picture, 4421  
**Tweedledum and Tweedledee**, picture in colour, face 5380

**Twelfth Night**, the story of the play, 476  
**Twelve-wired bird of paradise**, 1738  
 picture, 1742  
**Twenty Thousand Leagues Under the Sea**, story of the book, and picture, 4985  
**Two Gentlemen of Verona**, The, story of the play, 831  
**Two (the) Natures in Man**, statue, 4848; picture, 4849  
**Twopenny, William**, life and work of, with pictures, 5619  
**Two spotted chellinus**, picture in colour, face 200  
**Tying two people together**, trick, and picture, 4462  
**Tyler, John**, administration, 3535  
 as president, 1830  
 picture, 3535  
**Tyler, Wat**, leader of a rebellion, 752  
**Tytil**, in the Blue Bird, 5083  
**Tympanum**, what it is, 3969  
**Tyndall, J.**, found why sky is blue, 426  
 his life, 857; with portrait, 851  
 invented a vowel flame, 4918  
**Type metal**, what it is made of, 1870  
**Type-setting machine**, invented, 2670  
**Tyr**, Norse god, and picture, 85  
**Tyrant**, how meaning has changed, 4531  
**Tyre**, city, 1589, 5124  
**Tyrol**, its beautiful scenery, 2858  
 rose against the French, 123  
 united with Austria, 2854  
**Tyroless**, where they live, 320  
 working in the fields, picture, 2859  
**Tse-hai**, empress of China, picture, in colour, face 105

## U

**Ufa**, famous for iron mines, 3752  
**Uffizi Gallery**, Florence, picture, 2784  
**Uganda**, in Africa, 4260; picture, 4259  
**Ugly Duckling**, story, and picture, 1678  
**Uitlander**, what it means, 1770  
**Ullswater**, the maid of, tale, 1108  
**Ulna**, bone of the forearm, 2627  
**Ulnar nerve**, the funny-bone, 2627  
**Ultramarine**, colour used in painting, 3497  
**Ultra-violet**, colour notes, 3236  
**Ulysses**, dog that remembered him, story, 4221  
 had the wooden horse built, 70  
 his strange adventures, 68  
 how he went to the wars, 962  
**Umbrella**, history of the word, 4605  
 how it is made, with pictures, 3097  
 how to mend an umbrella, 4249  
 story of the umbrella, 3097  
 to dry an, 5523  
**Umbrella ant**, is the Saüba ant, 2944  
**Umbrella bird**, with picture, 1736, 1747  
**Umbrians**, settled in Italy, 5259  
**Una**, and the Red Cross Knight, 687  
**Uncle Remus**, tales of: see Brer Rabbit  
**Uncle Tom's Cabin**, a book about slavery, 1484  
**Undine**, in story of a water nymph, 5518  
**Undine and Bertha**, story, with picture, 4005, 4006  
**Ungava**, as district, 4105  
**Unhappy king of Persia**, story, 816  
**Unicorn-shah**, has a remarkable spine, 2451  
**Union Act**, of Canada, 3901, 4098  
**Union Jack**, pictures in colour, face 1640  
 story of, 1096, 1640, 2333  
**Unitarian Church**, what it is, 219  
**United States of America**, American heroes of science, 3280  
 American sculptures, 4841  
 boy (the) scouts of America, 3583  
 brave (a) little Quakeress, 1327  
 census and growth, 2420  
 child life in Colonial days, 941  
 civil war, 4390  
 cotton produced, 4808  
 Cuba and the Philippines annexed, 3360  
 education in, 2666  
 Erie Canal, 3534  
 Evangeline, 2461  
 fairyland (the) of Arizona, 3589  
 famous American painters, 4147  
 famous American writers, 1475

# INDEX

- United States of America**, first college founded by Puritans, 518  
 first legislature meets at Jamestown, Va., 516  
 first railroads in, 616, 3534  
 flag, 1095, 1640; with picture in colour, face 1640  
 Helen Keller, 5285  
 heroes of peace, 3104  
 how Peary found the Pole, 5211  
 how we get kerosene, 4131  
 Indian legends, 1063  
 Indians of the Painted Desert, 3683  
 inhabitants, 2665  
 Knickerbocker days in New York, 2245  
 Mammoth Cave, 583  
 manufactures, 1662  
 Natural History (the) Museum of New York, 4901  
 new (a) song of a shirt, 1620  
 new (the) woman, 3063  
 Pocahontas, 1329  
 population increases, 1095, 1644  
 Priscilla, 2261  
 railroads, first, 3534, 3537  
 raw and manufactured products, 2658, 2661-2662  
 some American inventors, 2666  
 some little girls of long ago, 2711  
 telegraph, 3535  
 Thomas Alva Edison, 447  
 trial (the) of the spy, 4281  
 upper New York, 5175  
 visit (a) to New York, 4305  
 war with Mexico, 4388  
 Washington, our capital city, 1819  
 what New York City does for its children, 3193  
 women writers of the United States, 2043  
 wonder worker in plants, 273  
 writers of famous American songs, 2953  
 Yellowstone Park, 587
- United States, History**, Alaska, purchase of, 2177, 3536  
 brothers' (the) war, 2007  
 building homes in the new land, 513  
 building the new nation, 1387  
 California, compromise concerning, 3536  
 Canal Zone, 2190  
 Civil War, causes, conditions, and results, 1598, 1828, 2007, 2012, 3536  
 Compromise of 1850, 2008  
 Confederate States Government organised, 2010  
 Cuba, 2184, 3538  
 Custer massacre, 3537  
 Dred Scott decision, 2008  
 early naval heroes, 2897  
 explorers and what they found, 257  
 famous ladies of the White House, 387  
 five famous presidents of the United States, 787  
 Florida, purchased, 3534  
 France, war with, 2898, 3533  
 Fugitive Slave Law, 2008, 3536  
 Gadsden Purchase, 3536  
 growing (the) West, 1819  
 Guam, taking of, 2190  
 Hawaii, annexation of, 2181, 3538  
 how we are governed, 1593  
 Indian wars, in the West, 3537  
 Japan, Treaty with, 3536  
 John Brown's raid, 2008, 3536  
 Kansas, as a battlefield, 3536  
 Lafayette, visit of, 3534  
 land (the) before the white men came, 9  
 Louisiana Purchase, 3534, 3538  
 Maine, sinking of, 3538  
 Mexican War, 1830, 3535  
 Midway Island, 2190  
 Missouri Compromise, 1825, 1826, 2008, 2009  
 Monroe Doctrine, 3534, 3538  
 Mormonism, 1832  
 naval heroes, 2897  
 navy, 2898, 3537  
 Oregon question, 3535  
 our colonial possessions and how we got them, 2177  
 our most northern possession, 4041  
 Pago Pago, harbour of, 2190  
 Panama canal, 2190, 3538, 5631  
 Perry's victory on Lake Erie, 4279  
 Philippines, 2184, 3538  
 Porto Rico, 2188, 3538  
 presidents' (the) administrations, 3533  
 Revolution (the), 977, 2897
- United States, History**, Samoan agreement, 2190  
 slavery in, 516, 1826  
 Spanish war, 2184, 2188, 3538  
 struggle (the) for the continent, 879  
 Texas, treaty annexing, 3535  
 Tripoli, war with, 2900, 3535  
 Two spies of the Revolution, 3811  
 United States Bank, 3535  
 United States (the) today, 2417, 2657  
 Venezuela boundary dispute, 3538  
 War of 1812, 1398, 2901, 3534  
 World's Fairs, 3537, 3538
- See also America; Battles; Canada; Civil War; Colonies; Explorations; Mexico; Political Parties; Wars; names of individual countries, states, etc.**
- United States, the**, a frigate, and the Macedonian, 1398, 2902  
 built, 2900  
 figurehead of, 4841
- United States Bank**, destroying of, 3535
- "Unright,"** nickname of a German treaty, 2528
- Unstable equilibrium**, what it means, 3673
- Unter den Linden**, picture, 2747  
 street in Berlin, 2579
- Unterwalden**, Swiss canton, 2964
- Upernivik**, town, picture, 52
- Upper Canada**, as a province, 3900
- Uppsala**, university town, 3600
- Up to London**, game, and picture, 5113
- Ur**, city of Mesopotamia, 4974
- Ural Mountains**, 3623, 3752, 3753
- Uranium**, an element, 1295, 1419, 2619
- Uranus**, discovered by Sir William Herschel, 1664  
 planet, its distance from sun, 150  
 what is known about it, 2429
- Urban the Good**, converted Valerian, 1014
- Urban II**, pope, with picture, 1588
- Urban VIII**, pope, 4956
- Urea**, was made by a chemist, 4120
- Uri**, canton of Switzerland, 2964
- Uri, Lake of**, in Switzerland, 1674
- Uric acid**, made in our bodies, 1799
- Ursa Major**: see Great Bear
- Ursa Minor**: see Little Bear
- Ursula, St.**, legend, with pictures, 1008
- Uruguay**, cattle industry, with picture, 4569, 4571  
 flag, picture in colour, face 1640  
 state of South America, 4502, 4568
- Uruguay River**, flows into river Plate, 4568
- Uspallata Pass**, tunnelled through, 4569
- Utah**, admitted, 3538  
 settlement, 1834
- Utrecht**, bishops of, in Netherlands, 3458  
 peace of, 3622, 5148  
 town in Holland, 3456
- ▼
- Vaal River**, in South Africa, 1769
- Vaccination**, 2459, 4200
- Vacuum**, what it is, 658, 917, 1992, 2230, 3942
- Valdai Hills**, in Russia, 3623
- Valdes**, besieged Leyden, 3553
- Valencia**, province of Spain, 3352, 3353
- Valentine, E. V.**, a sculptor, 4850
- Valerian**, husband of St. Cecilia, 1014
- Valerian**, Roman emperor, 5066
- Valerius Publius**, a Roman noble, 413
- Valetta**, chief town of Malta, 1875
- Valetta**, defended Malta, 1875
- Valhalla**, land of Norse gods, 86, 3417
- Valkyries**, maidens who attended Woden, 86
- Valladolid**, has been renamed, 4388
- Valley Forge**, winter at, with picture, 988
- Valleys**, 1929, 3227; picture, 408
- Valparaiso**, town, 4569; picture, 4573
- Value**, compared with cost, 1570
- Valves**, in veins, with picture, 1580, 1582
- Van Buren, Martin**, administration, 3535  
 as president, 1823  
 picture, 3532
- Vance, Governor**, and the Ad-Vance, 2019
- Vancouver, George**, visits Hawaii, 2181
- Vancouver**, description of, 5611  
 was founded, 1248
- Vancouver Island**, united with British Columbia, 4105

# INDEX

**Vandals**, conquered Iberian Peninsula, 3352  
**Wars with Romans**, 5268  
**Van Dyke, Anthony**, his portrait of a gentleman, 762  
 his portrait of Thomas Killigrew, 4591  
 his portraits of Charles I., 1022, 1887, 1891  
 painter, 760, 4587  
 portrait of the painter, 759  
**Van Dyke, Dr.**: see Poetry Index  
**Vandyke brown**, colour, 3497  
**Van Horne, Sir William**, life-work, 4472  
**Vanilla caramels**, how to make them, 3512  
**Vanishing pillar trick**, with picture, 1721  
**Van, Lake**, the fairy maid of, story, 2302, 4130  
**Van Tromp, Martin**, fought with Blake, 1027, 1892, 3463  
**Vapour**, the same as gas, 3384  
**Vapourer moth**, female never flies, 2993  
**Vardhamana**, what he taught, 2996  
**Varna**, chief port of Bulgaria, 3222  
**Varnishing wood**, with picture, 2256  
**Vase**, from Arabian Sea, story, 556  
 how a vase is made, picture, 4482  
**Vatican**, its building, 4946, 4950  
 Raphael's frescoes, 4954; picture, 4951  
 residence of the popes, 758, 3020  
 See also **Sistine Chapel**  
**Vaudois**, were persecuted, 1892  
**Vaughan, Henry**: see Poetry Index  
**Vecchio Palace**, with picture, 2784  
**Vedder, Elihu**, art of, 4151  
**Vega**, pictures, 2611, 2613  
 star, 2612  
**Vegetable ashes**, their value as manure, 4354  
**Vegetable marrow**, how to grow, 3278, 3922  
**Vegetables**, contain many salts, 2698  
 what to sow in April, 3176  
 what to sow in March, 2971  
 when to transplant greens, 3398  
**Vegetarians**, what they eat, 3216  
**Vell**, destroyed by the Romans, 414  
**Veins**, carry the blood to the heart, 1579  
 pictures 1580, 1581, 1636  
**Velasquez, D.**, born at Seville, 3361  
 his picture, *A Boy and His Dog*, 763  
 his picture, *Maid of Honour*, 4593  
 his work, 760, 4587  
 portrait, 759  
**Vellum**, a kind of parchment, 3399  
**Velocity**, what it is, 3672  
**Vendôme Column**, in Paris, 5005  
**Venetia**, province of Italy, 3012  
**Venesuela**, dispute concerning boundary, 3538  
 flag, picture, in colour, face 1640  
 republic of South America, 4580, 4574  
**Veni, vidi, vici**, Cæsar's letter, 5266  
**Venice**, a busy port, 3024  
 besieged Constantinople, 3154  
 Bridge of Sighs, 1253; picture, 1250  
 built on wooden piles, 1988  
 Doge's palace, 1250; pictures, 1249, 1257  
 Foscari and Pesaro palaces, pictures, 1257  
 Grand Canal and Rialto, pictures, 1255  
 her great power, 473  
 her history, 3016  
 how she became a city, 1249  
 Lion of St. Mark Column, 5005; pictures, 1249, 5008  
 makers of Venice, 1249  
 possessed Greece, 3158, 3219  
 Rialto Bridge, 1252; with picture, 1255  
 St. Mark's: see St. Mark's  
 seized Byzantine islands and ports, 3150  
**Ventilation**, why it is necessary, 1788  
**Ventricle**, a chamber of the heart, 1582  
**Venus**, goddess, brought Galatea to life, 962  
 got the golden apple from Paris, 1683  
 how she treated Psyche, 1902  
 mother of Æneas, 72  
**Venus**, a planet, 146  
 how far it is from the sun, 150  
 how the planet got its name, 2234  
 seen as a crescent, 2423  
 transit of Venus, 1661  
 was supposed to control love, 1940  
 what is known about it, 2424  
 why it is sometimes brighter, 2800  
**Venus of Milo**, picture, 4167  
 statue, 4160  
**Venus's fly-trap**, with pictures, 3541, 3734

**Vera Cruz**, battle of, 1832  
 founded by the Spaniards, 4382  
 taken by the United States, 4390  
**Verb**, in the active voice, 3370  
**Verbena**, plant, 1350, 5116  
**Verchères, Madeleine de**, how she held the fort, with picture, 127  
**Verdingtorex**, condemned by Julius Cæsar, picture, 418  
**Verdi, Giuseppe**, musical composer, 3253  
**Verdigris**, what it is, 6575  
**Vermicelli**, preparation of wheat, 2925  
**Vermont**, admitted, 1820, 3533  
**Vernal grass**, with picture, 1332, 1342  
**Verne, Jules**, his story, *Round the World in Eighty Days*, 4865  
 his story, *Twenty Thousand Leagues Under the Sea*, 4985  
**Verona**, Lord of, tomb, picture, 5006  
**Veronese, Paul Callari**, great painter, 1262  
 his picture, *The Feast in the House of Simon*, 1261  
**Veronica**, speedwell, with picture, 2042  
**Verrazano**, statue, 265  
 voyage of, 262, 3517  
**Verrucchio, Andrea del**, Colleoni monument, 1254, 4161, 4165  
**Versailles**, description, with pictures, 5334  
**Versailles Palace**, near Paris, 2070, 2267, 2270  
**Verse**, different kinds of verse, 343  
 made with figures and letters, 5661  
**Vertebra**, bones of the spine, 664, 2437, 2440  
 pictures, 664, 2441  
**Vertebrates**, animals with backbones, 664, 2437, 4217  
**Vertigo**, dizziness, 2233  
**Verulam**, where Alban lived, 482  
**Vespasian**, built the Coliseum, 5268  
 how Henry VII. resembled him, 2706  
 picture, 531  
 Roman emperor, ruled well, 531  
**Vespucci, Amerigo**, America was named after him, with picture, 59  
 voyage of, 258  
**Vesuvius**, eruption of, 5314  
 picture, in colour, 1062  
 volcano, 422, 2075  
**Vetch**, 4111, 4287  
 tufted, 4238; with picture, 4287  
**Vetchling**, grass: see Grass-pea, 4424  
**Vibration**, different kinds of vibration, 2620, 4914  
 experiment with a plate, 4916  
 what it is, 509, 3469, 4744  
 what nodes are, 4917  
**Vice-President (the) of the United States**, what he is, 1595, 1596  
**Vice-Presidents**, who succeeded to the office of president, 2418  
**Vicksburg**, surrendered, 2016  
**Victor, Claude Ferrin**, marshal, 4362  
**Victor Emmanuel**, first king of united Italy, 1640, 1654, 3024  
 pictures, 125, 3011  
**Victoria, Queen**, came to the throne, 1096  
 her reign, 1706, 2540  
**Victoria, Australia**, what it is like, 1353  
**Victoria**, capital of British Columbia, 5611  
**Victoria**, capital of Hong Kong, with picture, 113, 116  
**Victoria Falls**, 4254; pictures, 24, 4747  
**Victoria Land**, discovered by Ross, 4730  
**Victoria Nyansa, Lake**, 4254, 4260  
**Victoria Regia**, lily, 4500, 5116  
**Victory, Column of**, 2747  
**Victory of Samothrace**, sculpture, 4160  
**Vidocq, Eugène**, his life, 4930, 5073  
 pictures, 4930, 5073  
**Vienna**, besieged by the Turks, 2523, 3158  
 capital of Austria, 2576, 2858  
 picture, 2855  
 taken by Napoleon, 2530  
**Vienna, Congress of**, 2576, 2967, 3020, 3464; picture, 2576  
**Vigier, Jean**, his love for his mother, 4071  
**Vigilance Committee**, 1834  
**Vikings**, came to England, 430  
 invited to rule in Novgorod, 3624  
 old ships at Christiania, 3602  
 picture, 431  
 Scandinavian warriors, 3417, 3592  
**Villa de Cura**, native, picture, 4503

**Villager**, and the viper, fable, 3310, 5238  
**Villeneuve, F. C.**, defeated by Nelson, 4360  
**Vincent de Paul**, story of his life, 3009  
**Vinci, Leonardo da**: see Leonardo da Vinci  
**Vine**, bears grapes, 646  
**Vineyards**, great numbers in France, 2396  
**Viola**, how to grow, with picture, 5271, 5279  
**Violet colour**, 1935, 4507  
**Violet ground beetle**, 3264; picture, 3261  
**Violets**, bed of violets, picture, 1610  
 garden varieties, 5271  
 how to treat them, 927, 1610, 2134, 5271  
 marsh, 5032; picture, 5033  
 what they are like, 4111  
**Violins**, beauty of old violins, 4864  
 how the notes are made, 2620  
 how the quality of sound varies, 4913, 4914  
 how to make a violin from a cigar-box, with picture, 2867  
 made at Cremona, 1015  
 music of the willing heart, story, 5204  
 strings and their sounds, 1775, 4863  
**Viper**, 1374, 1380; picture, 1381  
**Viper's bugloss**, 4970  
 description, 4288; picture, 4284  
**Virgil**, great Roman poet, 67, 528, 5266  
 in house of Mæcenas, picture, 5216  
 life and writings, 5218  
 wrote the *Æneid*, 70  
**Virgilio**, name for the Pleiades, 3314  
**Virgin**, constellation, picture, 2611  
**Virgin cork**, decoration, picture, 4349  
**Virginia**, as slave-state, 2010  
 colony of, 514, 525  
 introduction of negroes, 516  
 named after Elizabeth, 1021, 5394  
 Raleigh's colonies in, 5394  
 secedes, 2012, 3536  
 western counties made into state of West Virginia, 2012  
**Virginia, the**, Confederate name of the "Mer-rimac," 2014  
**Virginian nightingale**, good singer, 2061  
**Virginians, The**, story of the book, with pictures, 3363  
**Virgin's bower**, clematis, 5276  
**Viscacha**, animal, 670; picture, 667  
**Visualizing**, what it is, 4943  
**Vitellius**, overthrew Otho, 531  
**Vittoria**, battle of, 3360, 4364  
**Vizor**, front part of a helmet, 157  
**Vladimir**, ruler of Russia, 3624  
**Vladivostok**, town, 3632, 3752  
**Vocal cords**, how they work, 1635, 3957  
**Vodka**, spirit drunk in Russia, 3746  
**Voice**, effect of empty room, 1643  
 how it may be produced, 2051  
 how the telephone carries it, 349  
 how to make euphonia, with picture, 5295  
 its different tones, 4913  
 its overtones, 4916  
 pictures made by the voice, 4072  
 the difference between voices, 4075  
 when ears are covered by hands, 1643  
 why a boy's voice breaks, 4827  
 why do some people speak musically and other harshly, 5644  
 why have some people more beautiful voices than others, 5644  
 why we get hoarse, 2455  
**Volatile alkali**, what it is, 1799  
**Volatile materials**, 4823  
**Volatile oils**, what they are, 2802  
**Volcanoes**, how they are formed, 2621, 3859  
 how they got their name, 4532  
 in America, 11  
 in Hawaii, 2181  
 in the moon, 2222  
 in the Philippines, 2182  
 Martinique eruption, 1878  
 pictures, 408, 2491, 3231, 4337  
 Vesuvius, 5314  
 what they are, 5, 408, 1062, 2075, 3229  
 what volcanoes were thought to do, 1577  
**Vole**, animal, 772; pictures, 771  
**Volga River**, 3623, 3750, 3752  
**Volscians**, enemies of Rome, 2002  
**Volta, Alessandro**, invented voltaic cell, 2119, 4314; portrait, 4313  
**Voltaire**, life and writings, 2524, 4064, 5221  
 picture, 4063

**Voluntary muscle**, obeys the will, 2626  
**Vortex box**, how to make, with picture, 4674  
**Vortex ring**, what it is, 3467  
**Vosges Mountains**, 2754  
**Vowel flame**, Tyndall's invention, 4918  
**Vowels**, how we sing them, 4076  
 the difference between a vowel and a consonant, 4077  
 the many vowel sounds, 4918  
**Vulcan**, made armour for Achilles, 68  
 made shield for Æneas, 72  
 Roman god, 2075, 4532  
**Vulcan**, name of a supposed planet, 2423  
**Vulcanizing**, process of, 5678  
**Vulcanite**, hardened rubber, 2135, 3543  
**Vulture**, with pictures, 1841, 1843  
**Vulture, the**, André's ship, 3812

W

**Wagner, Richard**, 3250; portrait, 3243  
**Wagtail**, 2218; pictures, 1744, 2217  
**Waimangu geyser**, picture, 4441  
**Wairoa River**, in New Zealand, 1462  
**Walshand**, how to make one, 1280  
 how to put it on, with picture, 835  
**Wakefield**, battle of, 2533  
**Wake-whin**: see cuckoo-pint  
**Waldi Tora**, bridge, with picture, 30  
**Wales**, British settlements, 196  
 conquered by Edward I., 118, 747  
**Wales, Prince of**, crest won at Cressy, 750  
 first prince of Wales, with picture, 2703  
 how the title arose, 748  
 prince and princess in India, picture, 1705  
**Walker, Helen**, how she saved her sister's life, with picture, 2204  
**Walker, Horatio**, art of, 4152  
**Walker, John**, invented lucifer match, 775  
**Walking**, how to find out how fast one walks, 2350  
 why a man can walk along a wire, 4749  
 why it is easier to walk on a rough surface than a smooth one, 3694  
 why we go slower uphill, 3437  
 why we swing our arms, 2455  
 with eyes shut, 1642  
**Wall**, what happens when we run into one, 4744  
**Wallaby, kangaroo**, with picture, 862, 863  
**Wallace, Dr. Alfred Russel**, evolution theory, 856; portrait, 851  
 studied birds of paradise, 1738  
 travels on the Amazon, 4498  
**Wallace, L.**, his story, Ben Hur, 5225  
**Wallace, William**, betrayed to the English, picture, 123  
 led the Scots against the English, 118, 748  
 monument at Stirling, picture, 5013  
**Wallachia**, an independent kingdom, 3150  
 forms part of Roumania, 3220  
 under Russian and Turkish rule, 3158  
**Wall barley**, with picture, 1337  
**Wallenstein, General**, 2528  
**Wallflower**, a European plant, 5270  
 how to grow it, 719, 1350, 1716, 3278, 3398  
 keeps green in winter, 1610  
 loves old walls, 5116  
**Wall knot**, how to make, with picture, 236  
**Wall marbles**, game, 5106  
**Wall-paper**, is it true that green wall-paper poisons us? 5575  
**Wall-pepper**, a stone-crop, 4285  
**Walls**, of Antonine, Hadrian, etc.: see Antonine, Hadrian, etc.  
**Walnut**, as food, 1965  
 black, 5446; with picture, 5439  
 in its green pod, picture, 1971  
 new varieties of, 2775, 2778  
**Walnut-tree**, what the wood is like, 4998  
 with picture, 1965, 3651  
**Walpole, Horace**, minister, 1004  
 pleased with Chatterton's work, 5320  
**Walpole, Sir Robert**, minister of George I., 2382, 2540, 2710; picture, 2379  
**Walrus**, its life story, 1091; picture, 1089  
**Walsingham, Sir Francis**, statesman, 2535  
**Walter the Penniless**, Crusader, 1587  
**Ward**, trick, and picture, 3174  
**Wandering Jew**, the legend of, 820

**Wandering stars**, name for planets, 2609  
**Wapiti**, savage deer, and picture, 381, 382  
**War**, are wars necessary? 5485  
 cannot be decided peacefully, 3241  
 how a meeting was held at Geneva, 2968  
 is there any good in war, 5485  
 names derived from war, 4908  
**Warbeck, Perkin**, Pretender, 3086  
**Warble-ly**; see **Ox-bot**  
**Warblers**, family of birds, 2057  
**Ward, John Q. A.**, life and work, 4846  
 statue of Washington, picture, 4306  
**Warmth**, and clothes, 682, 3381  
 how the body is warmed, 4114  
**Warner, Seth**, took Forts Ticonderoga and Crown Point, 984, 1820  
**Warner, Susan**, life, 2046  
**Warning**, game, 574  
**War of 1812**, causes of, 2900  
 effect on Canada, 3900  
 its effects, 3534  
 naval operations, 1398

See also **Battles; United States**

**War of the Spanish Succession**; see **Spanish Succession**, war of the  
**Warren, Admiral**, in command of fleet at Louisburg, 3622  
**Wars**, American Revolution, 977, 2897, 3538  
 Canada, rebellion of, 3901  
 Civil War, 3536  
 Creek Indian, 1399  
 French and Indian, 884, 979  
 Indian in the West, 3537  
 Indian torture of captives, 17  
 King George's war, 881  
 King William's war, 880  
 Mexican, 1830, 3535  
 of Carthage, 5511  
 Philippine, 2184  
 Queen Anne's War, 880  
 songs of American, 2957  
 Spanish, 2188, 3538  
 Texan War for Independence, 1828  
 United States and France, 2900, 3533  
 United States and Tripoli, 2900, 3533  
 war of 1812, 1398, 2901, 3534, 3900  
 warfare between fur-trading companies, 5148  
 See also **Battles; Civil War; Colonies; United States (history)**

**Warsaw**, town, and picture, 3744, 3746  
**Warships**, of Henry VIII.'s time, picture, 840  
**Wars of the Moses**, 756, 2533  
 how they got their name, picture, 753  
**Wart-hog**, and picture, 383, 384  
**Warton, Thomas**, portrait, 213  
**Washington, Booker T.**, life, 2914  
**Washington, George**, administration, 3533  
 as president, with pictures, 1390, 1394  
 conduct of the Revolution, 988  
 ends the Revolution, with pictures, 992  
 farewell to the army, 1388  
 journeys to the French, with picture, 882  
 life, with portrait, 787  
 portraits painted of, with pictures, 4148, 4149  
 sends Nathan Hale out as a spy, 3811  
 statues made of, 4841, 4842, 4850  
 takes command of American army, 984

#### Pictures

American Army under Washington crossing the Delaware River, by E. Leutze, 989, 4135  
 as a young man, painted by C. W. Peale, 4154  
 at Valley Forge, 989  
 delivering his first address as president, 1387  
 farewell to his generals, 993  
 inauguration of, 1391  
 portraits, 787, 1707, 3532  
 statue of, by J. Q. A. Ward, before the N. Y. City Sub-Treasury, 4305  
 Washington's trip, 883  
**Washington, Lawrence**, brother of Geo. Washington, 882  
**Washington, Martha Custis**, life, with portrait, 387, 786  
**Washington City**, burned, 1399, 3534  
 description, with pictures, 1708  
**Washington Square**, description, 4308; picture, 4311

**Washington, State of**, admitted, 3537  
**Wasp**, the, and Frolic, 1398, 2902  
**Wasps**, can sting only once, 780  
 distinguish colours, 4216  
 life-story, 2826  
 nests of wasps, pictures, 2823, 2825  
 sting, through microscope, picture, 2322  
 the poison in their bodies, 5021  
 what the brain of a wasp is like, 3563  
**Watch**, and its parts, picture, 1535  
 primitive watch, pictures, 1539, 5165  
**Water**, air dissolves in water, 3762  
 as standard of measurement, 3814  
 boiling water can be made hotter, 3384  
 boils away as gas, 512  
 breathing under water, 3763  
 calmed by oil, 2505, 5020  
 can be compressed a little, 3948  
 cold water cracks a hot glass, 1062  
 crackles when a red-hot poker is put in it, 3095  
 different forms in the air, 1644  
 does not fall out of a revolving pail, 3974  
 effect on alkalies, 1800  
 exists in three forms, 359  
 expands as it gets cooler, 3036  
 filtering, 5524  
 found in other worlds, 3382  
 found on Mars, 2427  
 full of tiny creatures, 46  
 great store of heat, 4475  
 hard and soft water, 1569  
 helped to shape the earth, 406  
 how affected by frost, 3694, 4339, 4546  
 how it is heated by lime, 4338  
 how it petrifies wood, 5250  
 how much water there is in the sea, 2620  
 how people are able to stay a long time under water, 1638  
 how to carry it, 4032  
 how to drink glass of water covered with hat, trick, 5112  
 how water comes to us, 2102  
 how water is made, 1193  
 how wonderful water is, 2101  
 in flowers, 5641  
 is a compound, 940  
 is a mobile liquid, 5020  
 its graphic formula, 1798  
 its high specific heat, 4475  
 its surface is curved, 3760  
 its weight, 543  
 law of floating things, 3096  
 makes seeds sprout, 1778  
 may be split up, 1194  
 more water than dry land, 3004  
 necessary for life, 548, 2697  
 oil will not mix with water, 37, 2505  
 reason for freezing not known, 4825  
 reflects things from a distance, 3034  
 ripples on water, 1055  
 running water purer than stagnant, 4547  
 runs because it has little cohesion, 617  
 size of rain-drops, 5384  
 small things float towards large, 3865  
 specific gravity, 3815  
 stops radiant heat, 4320  
 the great marvel of water, 1167  
 the magic of a glass of water, 580  
 the world in the waters, 2335  
 time to heat, 3430  
 water disappearing from the earth, 3071  
 what happens when it evaporates, 2235  
 what makes water boil, 512  
 what the unit of mass is based upon, 3671  
 what to do if one falls into water, 3397  
 what water is made of, 1039, 1666, 1797  
 where spring water comes from, 1987  
 where the oceans came from, 3429  
 why a wet plate gets dry if left alone, 2505  
 why boiling water feels cold, 3384  
 why colours appear on water, 1993  
 why does it dry up in hot weather? 5687  
 why does it splash when it drops to the ground? 5687  
 why does sugar dissolve quicker in hot water than in cold? 5578  
 why hot water cleans things, 4230  
 why it gurgles when it comes out of a bottle, 3756

# INDEX

**Water**, why it has no taste, 3695  
 why it swells when heated, 4546  
 why it will not burn, 5022  
 why the steamship carries water, 73  
 why water puts out fire, 1775  
 why we can see through water, 1266  
 with and without heat, 4048

## Pictures of water

drop of water under the microscope, 2321  
 girl with a glass of water, 2101  
 how the waters carve the earth, 402  
 how the waters creep over the earth, 409  
 how water is made up, 1041  
 the water that is everywhere, 1171  
 wonder of dripping water, 1236  
**Water-avens**, and picture, 4965, 4966  
**Water Babies**, story of the book, and pictures, 3801  
**Water-beetles**, pictures, 2322, 3261  
**Watercross**, in New Zealand, 3827, 4967  
 what it is like, 4970; picture, 4967  
**Water-crowfoot**, and picture, 4960, 4961  
**Water-dropwort**, and picture, 4965  
**Water-falls**, Reichenbach, 5674  
 Tummelbach, 5673  
**Water-hemlock**, 4112, 4970  
**Water-hen**, 1951; pictures, 1744, 1950  
**Watering-can**, picture, 233  
**Water-lilies**, and picture, 4960, 4962  
 the white lily, a legend, 1068  
**Waterloo**, battle of, 1095, 2277, 3464, 4364  
 picture, 1092  
**Water-mint**, and picture, 4969, 4970  
**Water-mole**, where it lives, 1364  
**Water of life**, liquors called, 5644  
 story, and pictures, 4373  
**Water-pipes**, in frosty weather, 3694  
 the bursting of, 5624  
**Water-plantain**, and picture, 4963, 4966  
**Water-power**, in United States, 2662  
**Waterproof**: see Mackintosh  
**Water-scorpion**, picture, 3301  
**Water-seller**, *The*, by Velasquez, 760  
**Water-shrew**, picture, 673  
**Water-silver**, in chemistry, 154  
**Water-soldier**, what it is like, 4962  
**Water-spider**, lives under water, 3303  
**Water-spout**, how it is caused, 2459  
**Water-thyme**, what it is like, 4962  
**Water-vapour**, protects us from sun, 4321  
**Water-violet**, and picture, 4969  
**Water-vole**, harmless animal, 772  
**Watson**, Sir William, improved the Leyden jar, 2116, 4314; portrait, 2113  
**Watt**, James, invented a steam-engine, 610, 655  
 made engines for the steamboats, 2472  
 watching a kettle steam, picture, 611  
**Watteau**, Antoine, his picture, *The Embarkation for the Isle of Cythera*, 4594  
 work as painter, 4587  
**Watts**, George Frederick, his pictures: Sir Gallahad, 873  
**Watts**, Isaac, life, 1996; with portrait, 1999  
 poems: see Poetry Index  
**Waugh**, Edwin: see Poetry Index  
**Wave**, how a wave is caused, 1056  
 how a wave moves, 4757  
 how waves radiate, picture, 3531  
 instances of vibration, 3469  
 seventh wave is not bigger, 2235  
 what are the wild waves saying? picture, 1412  
 why oil calms them, 2506  
 why waves break on each side of a channel at the same time, 1056  
 why waves curl over and break, 3979  
**Waved umber moth caterpillar**, picture, 3411  
**Waverley**, first of Waverley Novels, 1493  
 story of the novel, 1496  
**Waverley Novels**, story of them, 1493  
**Wax vesta**, General Waxvestas and his family, how to make, and picture, 457  
 how it is made, and pictures, 2358  
**Waxwing**, bird, picture, 1736  
**Waxworks**, living waxworks at home, 5290  
**Wayne**, Anthony, called "Mad Anthony," picture, 985  
 drives British out of Florida, 1387  
**Wealth**, how its meaning has changed, 4531  
 real wealth of a nation, 585

**Weasel**, and picture, 137, 140  
 dwelling of, 5414  
**Weather**, decided by atmospheric pressure, 3946  
 effect of earth's distance from sun, 3240  
 how to foretell the weather, 2504  
 how to study it, 2969  
 scientific name, 2504  
 some days hotter than others, 3689  
 what our weather is due to, 1860  
**Weather Bureau of the United States**, in U. S. Agricultural Dept., 1597  
**Weather-glass**, how to make one, 4354  
**Weatherly**, F. E.: see Poetry Index  
**Weather-vane**, an easily made, 5664  
 how to make one, and picture, 2669  
**Weaver-bird**, home, and picture, 1737, 1746  
**Weavers**, settled in England, 752  
 weaver and the cloth, puzzle, and picture, 2260, 2350  
**Webb**, Captain, swam the Channel, 4324  
**Weber**, Carl von, composer, 3252  
**Webster**, Daniel, portrait bust of, made, 4842  
 statue of, made, 4844  
**Webster**, John, poet, 3330  
**Wedding-rings**, their origin, 1370  
**Wedgwood**, Josiah, his life, 4478  
**Wednesday**, meaning of name, 5389  
**Wednesday**, how it got its name, 86, 423  
 what the word means, 4532  
**Weeds**, how to treat them, 573, 3278  
 roadside plants and weeds, with pictures, 4185  
**Week**, what it is, 80  
**Wegmann**, F., as inventor, 2670  
**Weight**, depends on gravity, 3671  
 effect of earth's pull, 543, 3234  
 effect of magnetism, 3761  
 hot or cold things weigh the same, 3762  
 lb. and oz. should not be written in plural form, 5524  
 size and weight of things, 3813  
 theory of falling weights: see Falling bodies  
 weight of ice and water, 4339  
**Wei-hai-wai**, Chinese territory, 1879  
**Weisenthal**, Charles F., attempts a sewing-machine, 1621  
**Weka** rail, bird, 1958; picture, 1431  
**Well**, how to make a well with a reel, and picture, 2111, 4352  
**Welland Canal**, acquired by Canada, 4098  
**Wellington**, Arthur Wellesley, Duke of, and Blücher after Waterloo, 4363  
 as a boy, in colour, face 4355  
 buried in St. Paul's, 1096, 3362  
 commanded English troops, 2276, 3360  
 did not say "Up Guards, and at them," 5524  
 his life, 4362  
 king of Spain's present to, 760  
 portrait, 4355  
 surveying field of Waterloo, 4363  
 tomb in St. Paul's, picture, 5013  
 writing by candle-light, in colour, 652  
**Wellington**, capital of New Zealand, 1464  
**Wellington**, New Zealand province, 1462  
**Wells**, H. G., *The Day of the Comet*, extract from, 5509  
**Welsh mountain sheep**, a fine breed, 390  
**Wener**, Lake, in Sweden, 3600  
**Wentworth**, one of the men who first crossed the Blue Mountains, 355  
**Wesley**, Charles, poems: see Poetry Index  
 portrait, 1999  
 wrote hymns, 1100, 1996  
**Wesley**, John, founded the Methodist Church, 1996  
 his life, 3698; pictures, 1999, 3696  
 wrote hymns, 1100  
**Wessex**, former kingdom, 428  
 wisest maid in Wessex, story, 2302, 4007  
**West**, Benjamin, a painter of portraits, 2468  
 his life and art, 4147  
 picture of Regulus, 5511  
**West**, Charles, tried to lay a cable, 2474  
**Western Australia**, 1362; pictures, 1363  
**Western Church**, foundation, 3150  
**Western Ghats**, mountains, 1546  
**West Indian herring**, 210  
**West Indian land crab**, and picture, 2584  
**West Indies**, mistaken for India by Columbus, 1877



# INDEX

- West Indies**, story of the islands, 1878  
 their name, 7, 58  
**West Indian people**, picture, 1874  
**West Point**, attempt to betray, 3812  
**West River**: see Si-kiang  
**West Virginia**, admitted, 3536  
 organised from anti-secession counties of Virginia, 2012  
**Westinghouse, George**, as inventor, 2670  
**Westland**, New Zealand province, 1464  
**Westminster**, horses for nothing at, story, and picture, 4636  
 story of Big Ben: see Big Ben  
**Westminster Abbey**, contains the chapel of Henry VII., 1156  
 its building, 434, 598, 1167  
 not its real name, with picture, 5524  
 tales of, 4635; pictures, 1156, 1165  
**Westmorland**, meaning of name, 5389  
**Westphalia, Peace of**, 2528, 2966  
**Westward Ho!** story of the book, 3661  
**Westwood, Thomas**: see Poetry Index  
**Wethersfield (Conn.)**, founding of, 524  
**Wetter, Lake**, in Sweden, 3690  
**Wexford**, taken by Cromwell, 1889  
**Weyler, General**, treatment of Cubans, 2184  
**Whale**, a devoted parent, 5328  
 does not spout water, 5524  
 is a mammal, 5524  
 life-story, and various kinds, 1081, 1083  
 lives a long time, 2327, 2328  
 pictures, 51, 1083  
**Whalebone**, where it comes from, 1082  
**Whale-headed stork**, its beak, 1956  
**Wharton, Henry**, in "The Spy," 4231  
**What is it?** game, 2490, 2570  
**What is its name?** game, 2772  
**What is wrong?** game, 5292  
**Wheat**, exhausts the soil, 903  
 fields in New South Wales, pictures, 1357  
 grown with the aid of nitrates, 1798, 3341  
 harvest in Canada, picture, 3344  
 harvest in the wheatfield, picture, 1148  
 how grown and harvested, pictures, 4081  
 how wheat grows, with pictures, 1146  
 importance as a food, and picture, 2923  
 imported wheat, 1144  
 improvements in grinding, 2670  
 in Canada, 5365  
 in Manitoba, 1242  
 in the United States, 2422  
 increase in price, 5170  
 is a grass, 1331  
 sheaves, pictures, 1143, 4079  
 where wheat comes from, pictures, 1145  
 yields the best food, 2078  
**Wheat ear**, bird, 2056; picture, 2053  
**Wheat grasses**, picture, 1333  
**Wheatstone, Sir Charles**, his work in telegraphy, 4316; pictures, 4313, 4315  
**Wheel**, Earl's Court wheel, picture, 2801  
 effect of oil on, 4601  
 has a speed limit, 684  
 how great wheels were built, 2801  
 why it goes round and stops, 683  
 why we cannot see the spokes when it turns quickly, 5024  
**Wheelbarrow**, for carting, 233  
 how to make, and picture, 3069  
**Wheelbarrow race**, and picture, 4242  
**Wheelwright, Bowland**, his picture, Joan of Arc taken by English, 126  
**Whelk**, its peculiar shell, 1410  
 pictures, 51, 1414, 1416, 1417, 2589  
 terror to other shell-fish, 2590  
**When the blind led the blind**, story, 1982  
**Where is it?** game, 2356  
**Whewell, William**, his puzzle, 4351, 4458  
**Why**, why one could live on it, 2792  
**Whigs**, a political party, 981  
 elect W. H. Harrison, 1830  
**Whimbrel**, bird, and picture, 1958, 1959  
**Whinchat**, and egg, pictures, 1744, 2053  
**Whipping-stitch**, how to do, and picture, 577, 578  
**Whirlpool**, cause, and picture, 4743  
 in a tumbler, 5666  
**Whirlpool Rapids**, 680  
**Whiskey**, does it make people warmer? 5574  
**Whisper**, what it is, 4078  
**Whistle**, that a boy can make, and pictures, 3823  
**Whistler, James McNeill**, art of, 4152  
 picture by, 4158  
**Whitchurch Down**, legend, 3208  
**White, Henry Kirke**, poet, 3485  
**White, Stanford**, made pedestal of Farragut statue, 4847  
**White admiral**, butterfly, 2962  
 picture in colour, face 2983  
**White ant**: see Termite  
**Whitebait**, fish, 204, 205, 206  
**White-beam**, tree, picture, 3446  
**White-breasted crow**, picture, 1847  
**White campion**, 3950; picture, 3949  
**White Captive**, the, a statue, with picture, 4843, 4844  
**White City**: see World's Fair, Chicago  
**White currant**, 642; picture, 651  
**Whitefield, George**, life, 3699  
 picture, 3701  
**White-headed eagle**, 1843  
**White House, The**, burned, 1399, 3534  
 description, with pictures, 1712  
 famous ladies of, 387  
**White Man's Grave**, where is the, 5641  
**White Nile**, river, 4260  
**White Palace**, at Agra, 1550  
**White Plains**, battle of, 986  
**White poplar**, tree, and picture, 3190  
**White rot**: see Marsh-pennywort  
**White Sea**, 3626, 4720  
**White shark**, 2443  
**White Ship**, story, with picture, 2477  
 wreck of, 594  
**White stork**, picture, 1953  
**Whitethorn**, name for hawthorn, 3449  
**Whitethroat**, bird, 2056; picture, 2053  
**White water-lily**, picture, 4960  
**White whale**, its uses, 1088  
**White willow**, flower, picture, 3191  
**Whitewood**: see Tulip-tree, 5624  
**Whiting, William**, poems: see Poetry Index  
 wrote a hymn, 2000  
**Whiting**, picture, 203  
**Whitman, Walt**, life, 1485  
 portrait, 1475  
 portrait, by John W. Alexander, 4157  
**Whitney, Eli**, as inventor, 1825, 2667, 4807  
**Whittier, John Greenleaf**, his life, 1482  
 pictures, 1475, 1480  
 poems: see Poetry Index  
 portrait bust of, 4848  
**Whittington, Dick**, and his cat, story, and picture, 326  
 did not owe his fortune to a cat, 5524  
**Wholesale bread**: see Brown bread  
**Whycocomagh**, Cape Breton Island, picture, 5603  
**Whydah**, weaver-bird, 1746  
**Why is it?** game, 2570, 2686  
**Wick**, in names, 427  
**Wilberforce, William**, how he worked for the slaves, 3700; picture, 3705  
**Wilcox, Ella Wheeler**: see Poetry Index  
**Wild cabbage**, picture, 4108  
**Wild cherry**, picture, 4109  
**Wilderness**, battle of the, 2019  
**Wild hyacinth**: see Bluebell  
**Wild oat**, picture, 2977  
**Wild rose**: see Dog-rose  
**Wilhelmshaven**, large naval port, 2750  
**Wilkes, Charles**, surveyed Samoa, 2190  
**Wilkins, Mary E.**: see Freeman, Mrs. M. W.  
**Willard, Frances**, wrote a song, 3740  
**Willow How**, fairies of, tale, 1321  
**William**, prince of Orange: see William III. of England  
**William**, son of Henry I., drowned, 592, 2532, 2702, 2477  
**William I.**, aided the clergy, 4709  
 began the building of the Tower, 1158  
 how he became king, 436  
 married Matilda of Flanders, 3458  
 pictures, 435, 436, 593  
 what kind of king he was, 2702  
**William II.**, king of England, built part of the Tower, 1158  
 called Rufus, 2702; portrait, 2710  
 killed, 592  
 persecuted the clergy, 4709  
**William III.**, king of England, 1029, 2535, 2708, 3463

# INDEX

- William III.**, king of England, landing at Torbay, picture, 2709  
**William IV.**, his short reign, 1096  
**William I.**, emperor of Germany, 2580  
 death, 2582  
 proclaimed emperor, picture, 2581  
 statue in Berlin, 2748  
**William II.**, emperor of Germany, 2748  
 pictures, 2747, 2756  
**William Penn**, the, figurehead of, 4841  
**William the Lion**, of Scotland, 596, 3082  
**William the Silent**, prince of Orange, 124, 3460  
**Williams, Frederick Ballard**, an artist, 4152  
**Williams, John**, life, 3486; portrait, 3483  
**Williams, Roger**, founded Rhode Island, 518  
**Williamsburg**, story dealing with flood of, 4968  
**Willing Heart**, music of the, story, 5204  
**Will of Charles Lounsbury**, 5203  
**Willoughby, Lieutenant**, how he defended a powder magazine, 1913  
**Willoughby, Sir H.**, navigator, 815, 4722  
 portrait, 4725  
**Willow-herb**, pod, picture, 3833  
**Willow-pattern plate**, story, 329  
**Willows**, for baskets, pictures, 395  
 in Acadia, picture, 5606  
**Willow-tree**, and picture, 3191  
**Willow wren**, egg, picture, 1744  
**Wills, W. J.**, explorer, 357; picture, 358  
**Wilmington**, resists capture, 2018  
 taken, 2019  
**Wilson, Mrs. Augusta Evans**, life, 2046  
**Wilton Hall**, could lad of, legend, 3648  
**Wiltshire**, 5389  
**Winchester**, old Roman city, 198  
**Winchester Cathedral**, how it was repaired, and picture, 3043  
**Wind**, and air pressure, 1067  
 making a toy to measure the wind, and picture, 1607  
 story of wind and signboards, 5342  
 what changes the way of the wind, 1868  
 what makes it whistle, 1057  
 what trade winds are, 4182  
 where it goes when it does not blow, 1056  
 why it is stronger at a height, 4550  
 wind and the sun, fable, and picture in colour, 3853  
**Windmill**, how to make a paper one, and picture, 98, 2872  
 much used in Holland, 3456  
**Window**, why a noise breaks it, 911  
**Window-swallow**, the, house-martin, 2212  
**Windpipe**, what it is, 1636  
**Windsor (Conn.)**, founded, 524  
**Windward**, what it means, 4565  
**Windward**, an exploring vessel, 4726  
**Wine**, largely made in France, 2396  
 what it is, 1872  
**Winged bulls**, brought from Assyria, 4973, 4977, 4978; picture, 4973  
**Winged Horse, The**, picture, 2615  
**Winged stick insect**, picture in colour, face 3141  
**Winkelried, Arnold von**, gained freedom for Switzerland, 122  
 gave his life for Switzerland, picture, 123  
 monument at Stans, 2966  
 Switzerland's national hero, 3105  
**Winking**, what it does for the eye, 424  
**Winkle**, what it is, 2590  
**Winks**, a game, 2573  
**Winebaggers**, medicine-men of, with picture, 1829  
**Winnipeg**, capital of Manitoba, 1242  
 description, 5366  
**Winner**, lighted London with gas, 656  
**Winter**, sports of, in Canada, 5209  
 views in winter, pictures, 2509, 2510  
 why it is cold, 411, 3032  
 winter's white diamonds, 2509  
**Winter aconite**, plant, 1816  
**Winter cherry**, 1203  
**Winter green**, picture, 4969  
**Winter's Tale, A**, story of the play, 550  
**Wire**, why one can walk along it, 4749  
**Wire gauze**, its effect on the flame of a gas-jet, 4319  
**Wireless telegraphy**, how it works, with pictures, 3522  
 now in use, 1099, 1421  
**Wisconsin**, admitted, 1836, 3535  
**Wisdom teeth**, when they come, 2898  
**Wishart, George**, died for his faith, 5068  
**Wishing table**, story, and picture, 1906  
**Wistaria**, how it got its name, 5116  
**Witch**, of forest tree, story, 710  
 the raid of the witches, story, and picture, 815  
 witch's ring, story, 464  
**Wizard King**, puzzles of the, 5357, 5452  
**Wizard of Wabasha**, trick, and picture, 4769  
**Wizard's castle in the air**, picture, 1111  
 story, 1110  
**Wizard's figure**, puzzle, and picture, 5112  
**Wizard's wand**, and the magic purse, 3068  
**Woden**, another name for Odin, 4532  
 gave us the name Wednesday, 86  
 sending ravens around world, picture, 85  
 was the god of war, 428  
**Wolf**, and crane, fable, with picture, 560, 877  
 boy who cried Wolf! 3310, 5238  
 communication between wolves, 5325  
 dog and the wolf, fable, 1979  
 in Indian legend, 1063  
 of same family as the dog, 500  
 pictures, face 51 in colour, 134  
 race with wolves, story, with picture, 963  
 stories of the young, 5478  
 that came in the night, story, 1054, 5120  
 used to live in our woods, 49  
 what kind of animal it is, 141  
 wolf, game, 2572  
 wolf and lamb, fable, with picture, 1793  
 wolf and the kid, fable, with pictures, 2141, 2939, 4755  
 wolf in sheep's clothing, fable, with pictures, 463, 2303  
**Wolfe, Charles**: see Poetry Index  
**Wolfe, General James**, death at Quebec, 3622  
 in battle of Louisburg, 884  
 takes Quebec, with picture, 878, 885  
 took Quebec, 1094, 1247  
**Wolf-spider**, with picture, 3303, 3301  
**Wollaston, William Hyde**, improved the microscope, 2320  
**Wolsey, Thomas**, cardinal, a counsellor of Henry VIII., 844  
 how he fell from power, 2706, 2916  
 the story of his life, 2379  
 pictures, 2379, 2389, 2707  
**Wolverhampton**, meaning of name, 5339  
**Wolverine**, its habits, 5152  
**Woman**, against a king, story, 2203  
 and empty cask, fable, with picture, 3853  
 famous ladies of the White House, 387  
 new (the) woman, 3063  
 who saved her family, story, 4446  
 who sold her shawl, story, 5224  
 women writers of the United States, 2043  
**Wombat**, its life-story, 864; picture, 863  
**Women's suffrage**, in Finland, 3753  
**Wonder**, its importance in life, 5132  
**Wonderful things** that live on the earth, picture in colour, face 51  
**Wood**, how it is petrified by water, 5250  
 how the grain runs, 338, 1345  
 how to know woods, 4998  
 how wood was burned, 900  
 is a bad conductor of heat, 4183  
 making a collection of woods, 5200  
 microbes cause wood to rot, 1988  
 soft and hard, 1617  
 staining and polishing, 2258  
 the atoms moving in wood, 4342  
 timber logs floated, picture, 1243  
 warps in damp weather, 3865  
 what knots in wood are, 5169  
 why it cracks when heated, 4442  
 why it feels warmer than iron, 3383  
 why wood floats, picture, 685  
 writing with ink on, 5666  
**Wood, Father**, made a piano, 1015  
**Wood, Jethro**, as inventor, 2668  
**Wood, Mrs. Henry**, her life, 2596  
**Wood-anemone**, 2338  
**Wood-ant**, 2943; picture, 2941  
**Woodbine**, meaning of word, 5116  
 See also Moneybuckle  
**Wooden Horse**, the victory of, 70  
**Wooden trestle bridge**, with picture, 29  
**Woodlark's egg**, picture, 1744  
**Wood-lice**, picture, 3297  
**Wood meadow-grass**, picture, 1341

# INDEX

- Wood-male**, a grass, with picture, 2976  
**Woodpecker**, 1960; pictures, 1741, 1960  
**Wood-pigeon**, the stock-dove, 2214  
**Wood-pulp**, made into paper, 888  
 trees for, 5430  
**Woodroffe, Nina**  
**Woodruff**, 4616; picture, 4611  
**Woods**, how they are carpeted, 3961  
 picture, 3649  
**Wood-shrimp**, damages timber, 2587  
**Wood-sorrel**, description, 4111, 4285  
 picture, 4291  
**Woodstock**, story about Charles II., 1496  
**Woodworth, Samuel**, author of *The Old Oaken Bucket*, 2963  
**Wool**, grown for Flemish looms, 3458  
 how to crochet shawl, and pictures, 5107  
 preparing wool in Australia, picture, 1359  
 production of in U. S., 2658  
 trade encouraged by Black Prince, 752  
 where does the wool go when we get holes in our stockings? 5643  
**Wool ball**, how to make, with pictures, 1197  
**Wool dolls**, how to make them, with picture, 342  
**Woolly bear caterpillars**, picture, 2983  
**Wool mat**, how to make, with picture, 2486  
**Woolpit**, the pits of Woolpit, legend, 3166  
**Worcester**, battle of, 1025, 1892  
 meaning of name, 5389  
**Words, W. de**, type improvements, 3574  
**Word-making**, a game, 2137  
**Words**, different words for same thing, 3239  
 how many words we use, 2330  
 made up from names, 4532  
 new words made, 1263  
 that tell stories, 4603  
 the number in English language, 2330  
 we think chiefly in words, 1367  
**Wordsworth, William**, his life, 3908  
 lived at Rydal Mount, 4341  
 poems: see *Poetry Index*  
 portrait, 3907  
 quotation from poem, 5257  
 what he said of Nature, 3240  
 why he was great, 940  
 wrote of Alban, 482  
**Work, Henry Clay**, author of *Marching through Georgia*, 2957  
**Work**, is it good to have to work, 5675  
 is it necessary for all living creatures to work? 5578  
**Work-basket**, what to do with a girl's work-basket, 456, 577, 835, 935, 1077  
**Workbox**, how to make a girl's workbox, with picture, 461  
**World**, before Columbus, 2  
 could not sustain all things born, 2078  
 first voyage round, 60  
 how the land and water are placed, 3006  
 increase of population, 1644  
 is becoming drier, 3071  
 is not yet all discovered, 2331  
 is there a world beyond our senses? 5385  
 its history is always being made, 2883  
 men who made the world known, 53  
 number of worlds, 4114  
 plants of two worlds, with pictures, 4285  
 the size of it, 624  
 what Columbus found, 4  
 what it is, 1  
 why do worlds not collide? 5384  
 why the worlds are round, 1131  
 world on a table, story, 5206

## Pictures of World

- finding the other side of the world, 1459  
 how the world's story was first told, 5099  
 the great worlds that travel through space, face 143  
 the Old World, 2  
 the procession of the worlds, 8  
**World's Fair**, in Chicago, 2418, 3538, 5513  
 in Philadelphia, 3537  
 in St. Louis, 3538  
**Worms**, breathe underground, 912  
 how they make tunnels, 50  
 make soil fertile, 3255; picture, 3257  
 why they still live when cut in two, 2454  
**Wormwood**, its family, 4112

- Worry**, why do we worry? 5573  
**Wotton, Sir Henry**: see *Poetry Index*  
**Wouter Van Twiller**, days of, 2246  
**Wrass**, a fish, 1411  
**Wreck**, picture, 2279  
**Wren, Sir Christopher**, built part of Westminster Abbey, 1157  
 how he built St. Paul's Cathedral, 1160  
 the church spires of Wren, picture, 1163  
**Wren**, egg and nest, pictures, 1744  
 how long it lives, 2328  
 how the wrens live together, 2060  
 Jenny Wren: see *Jenny Wren*  
**King Wren**, legend, 2377  
**Wrestlers**, how to make wrestlers from clothes-pegs, 934  
**Wright, Edward**, helped to give us Mercator's projection, 1751  
**Wrinkles**, the cause of, 2878  
**Wrist**, how it is formed, 2545  
**Writers**, American songs and song-writers, 2963  
 famous American writers, 1475  
 famous writers of 19th century, 2307  
 flowers of British authors, 4609  
 great writers of other lands, 5217  
 how they think, 4944  
 some Canadian, 4472  
 some great English writers, 4675  
 women writers of the United States, 2043  
**Writing**, a new way of writing figures, 3424  
 capital I, J, C, E, and G, 2890  
 capital M, N, S, L, and D, 3130  
 five new capital letters, 2650  
 five new letters, 963  
 how men destroyed all the writings long ago, 54  
 how men learned to write, 3399  
 how prehistoric men wrote, picture, 3400  
 how to write in cipher, 4137  
 how we must not write, 3783  
 learning to write capital letters, 2410  
 learning to write little words, 1930  
 letters above and below the line, 1448  
 letters below the line, 1689  
 letters with loops above the line, 1200  
 man did not always write, 3978  
 on clay, 3863, 5099  
 Tom and Nora and the pothooks, 487  
 Tom and Nora make more letters, 729  
 Tom and Nora use smaller crutches, 3492  
 Tom and Nora write figures, 3289  
 Tom and Nora write their letters, 3708  
 Tom and Nora write their names, 2171  
 Tom and Nora write with ink, 3371  
 why do we press hard on down strokes when writing? 5642  
 with ink on wood, 5666  
**Writing board**, how to make it, with picture, 1071  
**Writs of Assistance**, 1598  
**Wrought iron bridges**, 19  
**Wryneck**, bird, picture, 3394  
**Wupper Valley railway**, picture, 91  
**Württemberg**, agricultural country, 2754  
**Wyant, Alexander**, life and art, 4161  
 picture by, 4156  
**Wyatt, Sir Thomas**, led a rebellion, 2534  
**Wycliffe, John**, translation of the Bible, 753  
**Wyoming**, admitted, 3537  
**Wyss, Johann Rudolf**, his story, *The Swiss Family Robinson*, 1915

## X

- Xavier, Francis**, his conversion, 3990  
 portrait, 3981  
 went to Japan, 366  
 wrote hymns, 1995  
**Xenon**, element in argon, 1295  
**Xenophon**, how he led the Greeks from Cunaxa, 5064, 5076  
**Xeres**, port in Spain, 4532  
**Xerophytes**, what they are, 5031  
**Xerxes I.**, king of Persia, defeated by Greeks, 5129  
 his reign, 5062  
**X-rays**, due to radium, 1286  
 what they are, 5175

# INDEX

## Y

**Yachting**, ice, in Canada, 5210  
**Yak**, lives in Tibet, with picture, 277  
**Yakuts**, Siberian race, and pictures, 3751  
**Yang-tse-kiang**, great river of China, 106  
**Yankee Doodle**, history of song, 2955  
**Yard**, length, 3670  
**Yards**, of ships, and picture, 3913  
**Yarkand**, where it is, 3934  
**Yarmouth, Can.**, shipping point, 5601  
**Yawl**, ship, and picture, 3913, 3914  
**Yawning**, why it is infectious, 3863  
     why we yawn, 778  
**Year**, changes of the, 1  
     for a year and a day, legend, 3648  
     what a year is, 80  
**Yeast**, how it acts in dough, 1143, 3241  
     turns sugar into alcohol, 907  
     what yeast is, 1872  
**Yellow**, why things go yellow with age, 3865  
**Yellow Dwarf**, story, and picture, 1050  
**Yellow fever**, conquest of, 3200  
     controlled in Panama, 5634  
     how it was conquered, 3146  
**Yellow Fever Commission, The U. S.**, work done by, 3200  
**Yellow flag**, flower, 5272  
**Yellow fleshane**, 5272; picture, 5032  
**Yellow hammer**, 2067; picture, 2055  
**Yellow horned poppy**; see **Horned poppy**  
**Yellow loosestrife**, 4970; picture, 4967  
**Yellow mountain saxifrage**, picture, 4835  
**Yellow oat grass**, picture, 1335  
**Yellow ochre**, colour, in painting, 3497  
**Yellow pea**, 4111  
**Yellow rattle**, lives on other plants, 3830  
**Yellow River**; see **Hwang-ho**  
**Yellow Sea**, where it is, 363  
**Yellowstone National Park**, in Rocky Mountains, 1244; picture, 402  
**Yellowstone Park**, description, with pictures, 587  
**Yellow water-lily**, picture, 4960  
**Yenisei River**, its length, 3752  
**Yew-tree**, American, 5438  
     pictures, 3453  
     poisonous, 5438  
**Yezo**, northern island of Japan, 364  
**Yoke**, a ship's rudder yoke, 4584  
**Yokohama**, opened to foreign trade, 366  
     port of Tokio, 370; picture, 363  
**Yonge, Charlotte M.**, her life, 2599  
     portrait, 2593  
**Yoritomo**, first shogun of Japan, 365  
     tomb at Yokohama, 370  
**York**, a Roman city, 198  
     as the birthplace of Constantine, 5321  
     crock of gold, legend, 1983  
     meaning of name, 5389  
**York, Duke of**, New York named in honour of, 521  
**York, Canada**, captured, 1399  
     (Toronto) capital of Upper Canada, 3900  
**York, House of**, struggle for the crown of England, 756

**Yorktown**, siege and surrender of, 992, 2014  
**Yosemite Valley**, picture, 322  
**You mustn't laugh**, game, 2573  
**Young, Dr. Thomas**, discovery about light waves, 5042  
     what he thought of the eye, 4509  
     wrote on energy, 3552  
**Young, Ella Flagg**, as school superintendent, 3066  
**Young, Mrs. Alice Hegan Rice**, sketch of, 2050  
**Young Italy Society**, 214  
**Young Turks**, party of reformers, 3228  
**Youth**, land of, story, and pictures, 2093  
**Yturbe, Augustin de**, rebelled against the Spaniards, 4388  
**Yucatan**, colonies founded by Spain, 4383  
     peninsula of Mexico, 4381  
**Yukon**, Canadian district, 4105, 5599

## Z

**Zacatecas**, city of Mexico, picture, 4391  
**Zama**, battle of, 5264  
**Zambesi River**, bridge at Victoria Falls, picture, 24  
     enters the Indian Ocean, 4254  
     its great bridge, 20  
     pictures, 1770, 2618  
**Zanzibar**, celebrated for its cloves, 4262  
     flag, picture in colour, 1640  
     where Livingstone's body was carried, 283, 1373  
**Zebra**, its family, 270; pictures, 51, 270  
**Zebra sole**, picture in colour, face 200  
**Zeeland**, united with Holland, 3462  
**Zend-Avesta**, Bible of the Persians, 5066  
**Zeppelin**, Count, his airship, picture, 162  
**Zero**, what absolute zero is, 4049  
**Zeus**, god of thunder, 5126  
     statue at Olympia, 5128  
**Zeuxis**, Greek painter, 4585  
**Zizac**, bird, 1222; picture, 1229  
**Zinc**, dug from the ground, 288  
     in Canada, 5600  
     production of in U. S., 2660  
**Zinc chloride**, how it is formed, 1667  
**Zodiac**, its constellations, 2615  
**Zoo**, barn-door cock for zoo, with pictures, 933  
     horse for our toy zoo, and picture, 1608  
     how to make, with pictures, 575  
     rabbit and pig, for zoo, with pictures, 829  
**Zoo-guess**, game, and pictures, 2138  
**Zoroaster**, portrait, 2995  
     what is known of him, 3000  
**Zoroastrianism**, religion of Medes and Persians, 5058  
     what it teaches, 3000  
**Zuocaro**, dismissed from the Escorial, 5499  
**Zulus**, South African people, 1766  
**Zürich**, its industries, 2968  
     its interesting letters, 2966  
     picture, 2963  
**Zürich, Lake**, in Switzerland, 2960  
**Zutphen**, battle of, 467  
**Zuyder Zee**, its formation, 3456, 3458  
**Zwingli, Huldreich**, reformer, 2963

# SPECIAL INDEX OF POEMS & NURSERY RHYMES

THIS is probably the most complete index of verses for boys and girls appearing in any book. The names of poets are in the general index, but in this special index a poem is entered three times, so that it can be found if we know either the title, the first line, or the author's name.

The collection of poetry in the Children's Encyclopædia is made up of separate pieces, and they represent every kind of verse. There are sonnets, songs, odes, dramatic pieces, humorous verses, hymns, and psalms; nursery rhymes in English and French; folk-lore songs of Germany; songs set to music; nonsense verses; and selections from Shakespeare and many other poets whose works are too long to quote as a whole. Illustrations are not indexed.

Not only is this collection the biggest and most representative collection ever made for children, but it is arranged on an educational plan, which not merely aims at cultivating a love for poetry in the minds of boys and girls, but also attempts to build up in the minds of readers a conception of the general nature of a poet's work, and of the meaning of particular poems. Every poem, moreover, has a special introduction, giving information about the author or the poem. The Poetry section, therefore, is a true education in the very best kind of literature.

All the poems of an author are together under his name. They are *indented* under the name, that is to say, the titles begin a little way on in the line, not straight with the other lines. This means that all poems with these short lines are by the author whose name is above them.

To find a poem look under the first line, the title, or the author's name. No notice is taken of "A" or "The," so that if you are looking for "The Spider and the Fly" you should look up "Spider."

## A

A, B, C, tumble down D, 3795  
 Abide with me, 3965  
 Abject, stooping, old and wan  
 Abou Ben Adhem and the Angel, 1124  
 Above the edge of dark appear the lances of  
   the sun, 3419  
 Across the narrow beach we flit, 4266  
**Addison, Joseph**  
   Spacious Firmament on High, The, 4014  
   Twenty-third Psalm, The, 563  
 Afar in the Desert, 1885  
 Ah! vous dirai-je, Maman 4400  
 Ahab Mohammed, 4265  
 Aladdin, 4922  
**Aldrich, Thomas Bailey**  
   Memory, 3964  
**Alexander, Mrs.**  
   All Things Bright and Beautiful, 4853  
   Once in Royal David's City, 2152  
**Alexander Selkirk, 4852**  
**Alisan, Leon**  
   Baby and the Brook, The, 4014  
 All are architects of Fate, 3966  
 All day long they come and go,  
 All the Children, 6243  
 All the World's a Stage, 2921  
 All Things Bright and Beautiful, 4853  
 All things shall pass away, 471  
 All worldly shapes shall melt in gloom, 3843  
 All's Right With the World, 701  
 All that thou art not makes not up the sum,  
   1561  
**Allerton, Ellen F.**  
   Beautiful Things, 3558  
**Allingham, William**  
   Fairies, The, 567  
   Robin Redbreast, 472  
   Wishing, 1033  
**Alma-Tadema, Miss Laurence**  
   If No One Ever Marries Me, 3560  
   King Baby on His Throne, 3560  
   Little Sister, The, 3559  
   March Meadows, 3559  
   Nesting Hour, The, 3559  
   New Pelisse, The, 3559  
   Playgrounds, 3559  
   Twilight Song, A, 3559  
 Alone I walked the ocean strand, 4208  
 Ambitious Sophy, 4014  
 American Flag, The, 1884  
 Ancient story I'll tell you anon, An, 2401  
 And what is so rare as a day in June? 2193  
**Anderson, Alexander**  
   Cuddie Doon, 3557  
 Angels' Whisper, The, 2808  
 Announced by all the trumpets of the sky,  
   3348  
 Answer to a Child's Question, 472  
 Antony, the Great Speech of Mark, 2917  
 Apple Winds, The, 5244

Arab's Farewell to His Steed, The, 702  
 Ariel's Song, 317  
 Armageddon, 3964  
 Armies in the Fire, 95  
 Arming of Pigwiggan, 1856  
**Arnold, Sir Edwin**  
   Armageddon, 3964  
**Arnold, Matthew**  
   Forsaken Merman, The, 3345  
   Quiet Work, 5242  
   Shakespeare, 4013  
 Around the green gravel the grass grows  
   green, 3799  
 Arrow and the Song, The, 4210  
 Arthur O'Bower had broken his band, 3029  
 As Dolly was milking her cow one day, 2407  
 As down in the sunless retreats, 1885  
 As I walked by myself, 1036  
 As I was going by Charing Cross 2405  
 As I was going o'er Westminster Bridge, 3029  
 As I was going to St. Ives, in colour, 2811  
 As I was going to sell my eggs, 4016  
 As I was going up Pippin Hill, 3275  
 As I went over the water, the water went over  
   me, 3795  
 As I went through a garden gap, 3029  
 As I went to Bonner, in colour, 2813  
 As in the sunshine of the morn, 3637  
 As Johnny went to school with books, 4694  
 As life's unending column pours, 5139  
 As little Jenny Wren, 3638  
 Aspiration, 4014  
 As soft as silk, as white as milk, 3029  
 As the days lengthen, 2128  
 Assyrian came down like the wolf on the fold,  
   The, 2292  
 At Flores in the Azores, 4205  
 At Last, 3636  
 At midnight, in his guarded tent, 5377  
 At Sea, 4524  
 At the king's gate the subtle noon, 5048  
 Attend all ye who list to hear our noble Eng-  
   land's praise, 4523  
 Au clair de la lune, 4530  
 Auld Lang Syne, 3274  
**Austin, Alfred**  
   Queen and the Flowers, The, 1883  
 Autumn, 2193  
 Aye, tear her tattered ensign down, 1558  
 Away, birds, away, 3349

## B

Baa, baa, black sheep, with music, 1786  
 Baby, 568  
 Baby and I, 3276  
 Baby and the Brook, The, 4014  
 Baby, baby, by, 3559  
 Baby, baby, lay your head, 472  
 Baby moon, 'tis time for bed, 3559  
 Baby was sleeping, A, 2808  
 Baby's got a new pelisse, 3559

# INDEX

- Baby's got no legs at all, 3559  
 Babyland, by Ella Wheeler Wilcox, 1491  
 Babyland, by George Cooper, 2810  
**Bailey, Philip James**  
 End of Life, The, 1033  
 Bailiff's Daughter, The, 5374  
**Baillie, Joanna**  
 Good-night, good-night, 1035  
 Bairnies cuddle doon at nicht, 3557  
 Baker's wife has sacks of gold, The, 4530  
 Ballad of Agincourt, The, 2721  
**Banks, George Linnaeus**  
 What I Live for, 5047  
 Banner of England, not for a season, 3791  
 Bannockburn, 824  
 Barbara Frietchie, 4851  
**Barbauld, Mrs. Anna Letitia**  
 Life, 5244  
 Barber, barber, shave a pig, 3349  
 Barefoot Boy, The, 2195  
 Bargain, The, 3793  
**Barham, Richard Harris**  
 Jackdaw of Rheims, The, 2647  
**Baring-Gould, Rev. S.**  
 Now the day is over, 5490  
 Bark that held a prince went down, The,  
 Barking sound the shepherd hears, A, 3556  
 Baron's Last Banquet, The, 4208  
**Barr, Matthias**  
 Only a Baby Small, 2723  
 Bat, bat, come under my hat, 1568  
**Bates, David**  
 Speak Gentily, 4265  
 Bath Time, 3559  
 Battle of Blenheim, The, 565  
 Battle of the Baltic, 1854  
 Battle-Hymn of the Republic, 4527  
**Baxter, Richard**  
 Lord, It Belongs Not to my Care, 4397  
 Be Patient with the Children, 4014  
 Beautiful Things, 3558  
 Beautiful faces are those that wear, 3558  
**Becker, Charlottes**  
 Envoy, 5374  
 Bed-time, 3559  
 Bedouin Song, 5046  
 Beech Tree's Petition, The, 471  
 Bees, The, with music, 3970  
**Begbie, Harold**  
 The Sun Was Falling to Sleep, 5380  
 What Every Wise Child Should Do, 5614  
 Beggar Maid, The, 822  
 Behind him lay the gray Azores, 567  
 Behold her, single in the field, 1561  
 Behold Shock-headed Peter, 4691  
 Bells, The, 3273  
**Bennett, William Cox**  
 Lullaby, O Lullaby, 4014  
**Béranger, Pierre Jean de**  
 Grandmother's Tale, The, 1489  
 Mary Stuart's Farewell, 2402  
 Beside the ungathered rice he lay, 1034  
 Best School of All, The, 3128  
 Better Land, The, 5240  
 Better Things, 5488  
 Better to smell the violet cool, 5488  
 Betty Pringle had a little pig, 4528  
 Between nose and eyes a strange contest  
 arose, 3557  
 Between the dark and the daylight, 3419  
 Bid me to live, and I will live, 3793  
 Big and Little Things, 3637  
 Billy, Billy, come and play, 3349  
 Billy Boy, 3277  
 Birch and green holly, boys, 1568  
 Birds are singing round my window, 3965  
 Birds in Summer, 4210  
 Birds of a feather flock together, 4211  
 Birth of Christ, The, 2152  
 Bivouac of the Dead, The, 5379  
 Black we are, but much admired, 3029  
 Blackbird (yes, blackbirds delight in warm  
 weather), A, 3421  
**Blake, William**  
 Lamb, The, 700  
 Laughing Song, A, 3272  
 Nurse's Song, 1856  
 Piping Down the Valleys Wild, 5376  
 Sleep, Beauty Bright, 1857  
 Tiger, The, 1126  
 Bless you, bless you, bonnie bee, 3276  
 Blessed are they that mourn, 4855  
 Blessings on thee, little man, 2195  
 Blind Boy, The, 1033  
 Blind Boy at Play, The, 3418  
 Blow, blow, thou winter wind, 2915  
 Blow, wind, blow, and go, mill, go, 4653  
 Blue and the Gray, The, 2404  
 Boadicea, 470  
 Bobby Shaft is gone to sea, 2922  
 Bogle Man, The, with music, 4654  
**Boker, George Henry**  
 Dirge for a Soldier, 1032  
**Bonar, Dr. Horatius**  
 Thy way, not mine, O Lord, 4013  
 Bonnie Jean, 5140  
 Bonny Kilmeny gae'd up the glen, 4393  
**Bostwick, Helen E.**  
 King's Picture, The, 5240  
 Bounce Buckram, velvet's dear, in colour, 2154  
 Bow, wow, wow, whose dog art thou? 4015  
 Bow-wow, says the dog, 2922  
**Bowles, William Lisle**  
 Caged Bird, The, 3558  
 Boy and the Angel, The, 4207  
 Boy stood on the burning deck, The, 1276  
 Boy's Song, 701  
 Bravest Battle That Ever Was Fought, The,  
 4690  
 Break, Break, Break, 5046  
 Breaking waves dashed high, The, 5138  
**Brewer, Ebenezer Cobham**  
 Little Things, 1033  
 Brian O'Lin had no breeches to wear, 3276  
 Bridge, The, 2193  
 Bring back your sheep, 4212  
 Brook, The, 96  
**Brown, F. C.**  
 Hundred Years to Come, A, 5488  
**Browning, Elisabeth Barrett**  
 Child's Thought of God, A, 568  
 Musical Instrument, A, 1783  
 Poet and the Bird, The, 5489  
 Sleep, The, 5377  
 Sweetest Lives, 1558  
 Woman's Shortcomings, A, 4209  
**Browning, Robert**  
 All's Right with the World, 701  
 Aspiration, 4014  
 Boy and the Angel, The, 4207  
 Grow old along with me, 2293  
 Home Thoughts From Abroad, 2005  
 How they Brought the Good News, 2291  
 Incident of the French Camp, 3966  
 Last Ride Together, 5140  
 Patriot, The, 4651  
 Pied Piper of Hamelin, The, 344  
 Prospect, 1032  
**Bryant, William Cullen**  
 Blessed are they that mourn, 4855  
 Death of the Flowers, The, 4651  
 Forest Hymn, A, 2403  
 Gladness of Nature, The, 4266  
 Indian at the Burial-place of his Fathers,  
 An, 5242  
 Planting the Apple-tree, 5240  
 Robert of Lincoln, 2481  
 Song of Marlon's Men, 1559  
 To a Waterfowl, 2810  
 To the Fringed Gentian, 4855  
 Bugle, The, 3347  
 Builders, The, 3966  
**Bull, John**  
 God Save the King, 5244  
**Bunyan, John**  
 Pilgrim, The, 2004  
 Shepherd boy's song in Pilgrim's Progress,  
 The, 3842  
 Burial of Sir John Moore, The, 701  
 Burial of the Linnet, The, 3420  
**Burns, Rev. James Drummond**  
 An Evening Hymn, 4207  
**Burns, Robert**  
 Auld Lang Syne, 3274  
 Bannockburn, 824  
 Bonnie Jean, 5140  
 Cotter's Saturday Night, The, 4011  
 John Anderson, 3842  
 Man's a Man for a' that, A, 4690  
 My Heart's in the Highlands, 1560  
 Red, Red Rose, A, 5047  
 To a Mountain Daisy, 4524



# INDEX

Bury the Great Duke, 4647  
 Butterfly and the Snail, The, 3637  
 Butterfly perched on a mossy brown stile, A, 4924  
 Butterfly's Ball, The, 1034  
 Buttons, a farthing a pair, 3798  
 Buy me a milking-pail, 3349  
 By the flow of the inland river, 2404  
 By the moon's silver ray, 4530  
 By the rude bridge that arched the flood, 1560  
 By the sea, 1855  
 Bye, Baby Bunting, 826  
 Bye, oh, my baby, 3796  
**Byrom, John**  
 Christians, awake, 2150  
**Byron, George Gordon, Lord**  
 Destruction of Sennacherib, The, 2292  
 Eve of Waterloo, The, 5378  
 Prisoner of Chillon, The, 3125  
 She Walks in Beauty, 3347  
 Solitude, 4649  
 Vision of Belshazzar, The, 2127

## C

Caged Bird, The, 3558  
**Campbell, Thomas**  
 Battle of the Baltic, 1854  
 Beech-tree's Petition, The, 471  
 Hohenlinden, 1035  
 Irish Harper, 2403  
 Last Man, The, 3843  
 Lord Ullin's Daughter, 825  
 Parrot, The, 1276  
 Ye Mariners of England, 704  
 Canadian Boat Song, A, 3026  
 Cane-Bottomed Chair, The, 5613  
**Carey, Lady Elisabeth**  
 True Greatness, 2723  
**Carey, Henry**  
 Sally in Our Alley, 3793  
**Cary, Ffombe**  
 Leak in the Dyke, The, 1781  
**Carroll, Lewis**  
 Walrus and the Carpenter, The, 1562  
 Casablanca, 1276  
 Castle-builder, The, 3558  
 Cat's Tea-party, The, 1786  
 Cataract of Lodore, The, 1274  
 C'est la mère Michel qui a perdu son chat, 4530  
**Chadwick, John White**  
 His Mother's Joy, 4525  
 Character of a Happy Life, The, 4013  
 Charge of the Light Brigade, The, 1782  
 Charley, Charley, stole the barley, 4015  
 Cherry Ripe, 3346  
 Chieftain to the Highlands bound, A, 825  
**Child, Mrs. Lydia Maria**  
 Thanksgiving Day, 4855  
 Child and Mother, 3797  
 Child and the Snake, The, 2126  
 Child's Evening Prayer, A, by Coleridge, 567  
 Child's Evening Prayer, A, by Graves, with music, 3422  
 Child's Thought of God, A, 568  
 Child's Wish in June, 5488  
 Children's Hour, The, 3419  
 Christians, Awake, 2150  
 Christmas Carol, A, 3419  
 Christmas Hymn, A, 4920  
 Christmas is coming, the are getting fat, 4924  
 Christmas Morning, 2151  
**Cibber, Colley**  
 The Blind Boy, 1033  
 Clap, clap handles, 4016  
**Clare, John**  
 Poet's Last Thoughts, A, 4266  
 Clear and cool, clear and cool, 2648  
 Close his eyes: his work is done, 1032  
 Cloud, The, 5239  
**Clough, Hugh**  
 Say Not the Struggle Naught Availeth, 3274  
 Cock-a-doodle-doo, in colour, 1567  
 Cock doth crow, The, 2128  
 Cock is crowing, The, 1276  
 Cock Robin got up early, 3030  
 Cock's on the housetop, blowing his horn, The, 925  
 Cocks crow in the morn, 824  
 Cold and raw the north wind doth blow, 2405

**Coleridge, Samuel Taylor**  
 Answer to a Child's Question, 473  
 Child's Evening Prayer, A, 567  
 Good, Great Man, The, 4397  
 Raven and the Oak, The, 2404  
**Coleridge, Sara**  
 Months, The, 471  
 Columbus, 567  
 Come, all ye weary wanderers, 2151  
 Come, dear children, let us away, 3345  
 Come, let us plant the apple-tree, 5240  
 Come, let's to bed, 827  
 "Come little leaves," said the wind one day, 2292  
 Come, live with me, and be my love, 5047  
 Come, take up your hats, and away let us haste, 1034  
 Come when you're called, 1568  
 Common Natures, 3557  
 Common Things, 4210  
 Composed upon Westminster Bridge, 3966  
 Conclusion, The, 3842  
 Contentment, 2848  
**Cook, Eliza**  
 Fern and the Moss, The, 4853  
 King Bruce and the Spider, 2479  
 Mouse and the Cake, The, 4209  
 Old Arm Chair, The, 2194  
**Cooper, George**  
 Babyland, 2310  
 The Leaves and the Wind, 2292  
**Cornwall, Barry**  
 Fisherman, The, 1276  
 Horned Owl, The, 2481  
 Sea, The, 4852  
 Stars, The, 704  
 Stormy Petrel, The, 4526  
 Coronation, 5048  
**Cory, William**  
 Heraclitus, 5376  
 Cotter's Saturday Night, The, 4011  
 Could ye come back to me, Douglas, Douglas, 1884  
 Could you count the bright stars peeping, 3027  
 Council of Horses, The, 3127  
 Counsel to Girls, 1783  
 Country life is sweet, A, 1276  
 Court of Fairyland, in colour, to face 332  
 Courtin', The, 1490  
**Cowper, William**  
 Alexander Selkirk, 4852  
 Boadicea, 470  
 Dispute Between Nose and Eyes, 3557  
 Dog and the Water-lily, The, 2126  
 Epitaph on a Hare, 2127  
 Faithful Bird, The, 3127  
 God moves in a mysterious way, 1855  
 John Gilpin, 2641  
 Loss of the Royal George, The, 472  
 Nightingale and the Glow-worm, The, 700  
 Retired Cat, The, 1784  
 Cradle Song, A, 1857  
 Croak, said the toad, I'm hungry, I think, 4015  
 Crocus, The, 4688  
 Cromwell, our chief of men, who through a cloud, 3965  
 Cross patch, 1568  
 Crossing the Bar, 1561  
 Cry of the Dreamer, The, 4689  
 Cuckoo and the Jackass, The, with music, 3796  
 Cuckoo's a bonny bird, The, 3276  
 Cuddle Doon, 3557  
**Cunningham, Allan**  
 At Sea, 4524  
 Curfew Bell, The, 3025  
 Curfew tolls the knell of parting day, The, 2003  
 Curly Locks, with music, 1568  
 Cushy cow, bonny, let down thy milk, 3799

## D

Dad has a boat, 4212  
 Daffodils, The, 96  
 Dainty, diddlety, my mammy's maid, 2922  
 Dainty shepherd maiden, A, 4212  
 Daisies at Christmas, A, 4922  
 Dame, get up, and bake your pies, in colour, 2156  
 Dame Trot and her cat, 3349  
 Dance a Baby, with music, 2128  
 Dance, little baby, dance up high, 3421

# INDEX

Dance of the Flowers, The, 3027  
 Dance to your daddie, 1036  
 Darling mother, shall I say, 4400  
 Day's Done, The, 4922  
 Daybreak, 3793  
 Death, 3792  
 Death, be not proud, though some have called thee, 3792  
 Death of Napoleon, 2293  
 Death of the Flowers, The, 4651  
 Death of the Old Year, 2153  
 Deed and a Word, A, 4690  
 Defence of Lucknow, The, 3791  
 Deserted House, The, 3636  
 Despot's heel, The, 2482  
 Destruction of Sennacherib, The, 2292  
 Dew was falling fast, the stars began to blink, The, 1881  
**Dibdin, Charles**  
   Tom Bowling, 1785  
**Dibdin, Thomas J.**  
   Sir Sidney Smith, 1853  
**Dickens, Charles**  
   Ivy Green, The, 2403  
 Dickery, dickery, dare, 4015  
**Dickinson, Mary Lowe**  
   If We Had But a Day, 3347  
 Did you hear of the curate who mounted his mare? 3272  
 Did you ne'er think what wondrous beings these? 4527  
 Diddle, diddle dumpling, my son John, 4398  
 Diddle-Diddle-Dumpty, 3421  
 Diller, a dollar, A, in colour, 2294  
 Ding, dong, bell, with music, 2484  
 Dirge For a Soldier, 1032  
 Discontented Apples, The, 2724  
 Discoverer, The, 4396  
 Dispute between Nose and Eyes, 3557  
 Do you know what the birds say? The spar-row, the dove, 472  
 Do you wish the world were better? 2126  
 Dobbin's Friend, 2723  
 Doctor Faustus was a good man, 3798  
 Doctor Foster went to Glo'ster, 2405  
**Dodge, Mary Mapes**  
   Billy Boy, 3277  
   Dobbin's Friend, 2723  
   Frolic of Johnny the Stout, The, 2720  
   Good Little Girls, The, 3277  
   Little White Feathers, 3277  
   One and One, 3277  
   Terrible Ball, The, 1857  
   Three Old Ladies, The, 3277  
   Willie's Lodger, 2724  
 Does the road wind up hill all the way? 4688  
 Dog and the Water-lily, The, 2126  
**Domett, Alfred**  
   Christmas Hymn, A, 4920  
**Donne, Dr. John**  
   Death, 3792  
 Don't fret about the thing that's past, 3370  
**Doudney, Sarah**  
   Lesson of the Water Mill, The, 4689  
   Things That Never Die, 2723  
 Douglas, Douglas, Tender and True, 1884  
 Dove says Coo, coo, what shall I do? The, 2922  
 Down from yon distant mountain height, 4014  
**Drake, Joseph Rodman**  
   American Flag, The, 1884  
**Drayton, Michael**  
   Arming of Pigwiggen, 1856  
   Ballad of Agincourt, The, 2721  
 Dream of Eugene Aram, The, 2123  
 Dribble, dribble, trickle, trickle, 3276  
 Duck and a drake, A, in colour, 4267  
**Duncan, Mrs. Mary Lundie**  
   Jesus, Tender Shepherd, 4208  
 Dust, The, 5488  
**Dyer, Sir Edward**  
   Contentment, 2648

■

Earth has not anything to show more fair, 3966  
**Elder, Mrs. Lilla T.**  
   Mother's kisses, 1125  
   My Menagerie, 2194  
   O Mammy's Pickaninny, 4855  
   There's Room at the Top, 1491  
   Uncle Sam's Young Army, 3418

Elegy on the Death of a Mad Dog, 1855  
 Elegy Written in a Country Churchyard, 2003  
**Elliot, Henrietta Robins**  
   Why It Was Cold in May, 5489  
 Elixir, The, 3965  
 Elizabeth, Elspeth, Betsy and Bess, in colour, 2294  
**Emerson, Ralph Waldo**  
   Good-bye, 5139  
   Hymn of Concord, 1560  
   Mountain and the Squirrel, The, 924  
   Nation's Strength, A., 4525  
   Snow Storm, The, 3348  
 En passant dans un petit bois, 4925  
 Enchanted Shirt, The, 96  
 End of Life, The, 1033  
 England and America in 1782, 4649  
 England's sun was slowly setting, 3025  
 Envoy, 5374  
 Epitaph on a Hare, 2127  
 Ere on my bed my limbs I lay, 567  
 Eternal Father, Strong to Save, 4852  
 Ethereal minstrel! pilgrim of the sky, 2127  
 Eve of Waterloo, The, 5378  
 Even such is time, that takes in trust, 3842  
 Evening Hymn, An, 4207  
 Evening Hymn, 1560  
 Every evening, after tea, 5492  
 Every lady in this land, 4652  
 Every one that flatters thee, 2920  
**Ewing, Mrs.**  
   Burial of the Linnet, The, 3420  
 Excelsior, 704

F

Faintly as tolls the evening chime, 3026  
 Fair Daffodils, 2125  
 Fair girl was sitting in the greenwood shade, A, 3348  
 Fair maid who, the first of May, The, 1277  
 Fair stood the wind for France, 2721  
 Fairest action of our human life, The, 2723  
 Fairies, The, 567  
 Fairy Life, The, 2915  
 Fairy Lullaby, A, 2915  
 Fairy Song, 700  
 Fairy Tempter, The, 3348  
 Fals dodo, Colas, mon petit frère, 4530  
 Faith, 4206  
 Faithful Bird, The, 3127  
 Farewell, A, 96  
 Farewell, a long farewell to all my greatness, 2916  
 Farewell, farewell, thou beauteous clime, 2402  
 Farmer went trotting upon his grey mare, A, in colour, 2813  
 Farmer's dog leap'd over the stile, A, 2726  
 Father in heaven, hallowed be Thy name, 4396  
 Father William, 566  
 Father's Advice to His Son, 2920  
 Fatherland, The, 924  
 Fear death?—to feel the fog in my throat, 1032  
 Fern and the Moss, The, 4853  
 Fiddle-de-dee, fiddle-de-dee, 1277  
 Fiddle-Dee-Dee, 5050  
 Fidelity, 3554  
**Field, Eugene**  
   Fiddle-Dee-Dee, 5050  
   Good-Children Street, 2006  
   Rock-a-by Lady, The, 4923  
   Shuffle-Shoon and Amber-Lock, 3841  
   Teeny-Weeny, 5492  
   Wynken, Blynken, and Nod, 92  
**Finch, Francis Miles**  
   Blue and the Gray, The, 2404  
   Nathan Hale, 1569  
 Finis, 4690  
 Fir-tree, The, 3028  
 First day God created light, The, 4920  
 First Nowell, The, 4920  
 First the farmer sows his seed, 3795  
 Fisherman, The, 1276  
 Five little fairies, bright as the day, 972  
 Five little pussy-cats, invited out to tea, 1786  
 Five little sisters, walking in a row, in colour, 3845  
 Flight of Peter Bell, The, 3963  
 Flight of the Arrow, The, 4396  
 Flight of Youth, The, 5242

# INDEX

Flour of England, fruit of Spain, 3029  
**Follen, Missa Leo**  
 Oh, Look at the Moon, 3028  
 Fool there was and he made his prayer, A, 5377  
 For every evil under the sun, 1568  
 For I dipt into the future, far as human eye  
 could see, 5243  
 For want of a nail the shoe was lost, in colour,  
 2813  
 Forest Hymn, A, 2403  
 Forsaken Merman, The, 3345  
**Foster, Stephen Collins**  
 Massa's in the Cold, Cold Ground, 5376  
 My Old Kentucky Home, 3346  
 O, Boys, carry me 'Long, 3194  
 Old Folks at Home, 1558  
 Found in the garden dead in his beauty, 3420  
 Fountain, The, 701  
 Four-and-twenty tailors went to kill a snail,  
 827  
 Fox and His Wife, The, in colour, 560  
 Fragment of a rainbow bright, A, 1853  
**France, Nursery Rhymes of**  
 Ah! vous dirai-je, Maman, 4400  
 Au clair de la lune, 4530  
 C'est la mère Michel qui a perdu son chat,  
 4530  
 En passant dans un petit bois, 4926  
 Fais dodo, Colas, mon petit frère, 4530  
 Je suis un petit poupon, 4400  
 La Bergère, 4212  
 La boulangère a des écus, 4530  
 Les Petits Bateaux, 4212  
 Pan! Qu'est-ce qu'est là? 4490  
 Ramène Tes Moutons, 4212  
 Sur le pont d'Avignon, 5142  
 Friends and Flatterers, 2920  
 Friends, Romans, countrymen, lend me your  
 ears, 2917  
 Frog he would a-wooing go, A, with music,  
 1492  
 Frolic of Johnny the Stout, The, 7230  
 From breakfast on through all the day, 1035  
 From the desert I come to thee, 5046  
 Frost Looked Forth, The, 5136  
 Frugal snail, with forecast of repose, The, 426  
 Full knee-deep lies the winter snow, 2153

## G

Gather ye Rosebuds while ye may, 1783  
**Gay, John**  
 Butterfly and the Snail, The, 3637  
 Council of Horses, The, 3127  
 Gentle Jesus, meek and mild, 5243  
 Gentlefolks, in my time I've made many a  
 rhyme, 1853  
**Germany, Folk-songs of, in English verse**  
 Dance of the Flowers, The, 3027  
 Fir-tree, The, 3028  
 God Only Knows, 3027  
 Hobby-horse, The, 3028  
 Son of My Heart, 3027  
 Song of the Two Hares, 3027  
 Were I a Birdie Too, 3027  
 Gift on the Finger, A, 3795  
**Gilder, Richard Watson**  
 Great Nature is an Army Gay, 4526  
 Ginevra, 1882  
 Girl in the lane that couldn't speak plain,  
 The, 2726  
 Girls and boys come out to play, with music,  
 1036  
**Gisborne, Thomas**  
 Worm, The, 1856  
 Give me your ear, good children all, 1867  
 "Give us a song!" the soldiers cried, 1834  
 Give thy thoughts no tongue, 2920  
 Gladness of Nature, The, 4266  
 Go to bed first, 4211  
 Goblin Market, 1849  
 God be with thee, my beloved, 1558  
 God of our fathers, known of old, 4854  
 God made such nights, 1490  
 God moves in a mysterious way, 1855  
 God Only Knows, 3027  
 God Rest You, Merry Gentlemen, 2149  
 God Save the King, 5244  
 God Sends Love to You, 3419  
**Goethe, Johann W. von**  
 Haste not! Rest not, 1559

**Goldsmith, Oliver**  
 Elegy on the Death of a Mad Dog, 1855  
 Good dame looked from her cottage, The, 1781  
 Good, Great Man, The, 4397  
 Good King Wenceslas, 922  
 Good little boys should never say, 1688  
 Good Little Girls, The, 3277  
 Good name in man or woman, dear, my lord,  
 2920  
 Good people all of every sort, 1855  
 Good-bye, good-bye to summer, 472  
 Good-bye, proud world! I'm going home, 5139  
 Good-Children Street, 2006  
 Good-morrow to you, Valentine, 2726  
 Good-night, 472  
 Good-night, Good-night! 1035  
 Goodly host one day was mine, A, 3026  
 Goosey, goosey, gander, face 1408; with music,  
 in colour, 2294  
 Gossips of the village—see, The, in colour,  
 4267  
**Gould, Hannah Flagg**  
 Name in the Sand, A, 4208  
 Grandmother's Tale, The, 1489  
 Grave old clock on the mantelpiece, The, 4924  
**Graves, Alfred Percival**  
 Bees, The, with music, 3970  
 Bogle Man, The, with music, 4654  
 Child's Evening Prayer, A, with music, 3422  
 Cuckoo and the Jackass, The, with music,  
 3796  
 Ladybird, Fly, with music, 3028  
 M. N. O., with music, 3275  
 White Hart, The, with music, 3846  
 see also Germany, Folk-songs of  
**Gray, Thomas**  
 Elegy in a Country Churchyard, 2003  
 Great A, little A, 4398  
 Great A, little a, bouncing B, 3638  
 Great Day for England, A, 2919  
 Great King William spread before him, 3347  
 Great Nature is an Army Gay, 4526  
 Great, wide, beautiful, wonderful world, 824  
 Greedy Boy, The, 922  
**Greenaway, Kate**  
 Five little sisters, walking in a row, 3845  
 Little Miss Patty and Master Paul, 3845  
 Look over the wall, and I'll tell you why, 3844  
 Polly's, Peg's and Poppety's, 3845  
 Prince Flinikin and his mamma, 3844  
 Three little girls were sitting on a rail, 3845  
 Three tabbles took out their cats to tea, 3845  
 Under the window is my garden, 3844  
**Greene, Albert Gorton**  
 Baron's Last Banquet, The, 4208  
 Greenhouse is my summer seat, The, 3127  
**Gregory, Charles Noble**  
 Two Men, 5489  
**Greville, Sir Falke**  
 On Sir Philip Sidney, 5487  
 Groves were God's first temples, The, 2403  
 Grow old along with me, 2293

## H

Hail, to thee, blithe spirit, 5137  
 Half a league, half a league, 1782  
**Hall, Gertrude**  
 Dust, The, 5488  
**Halleck, Fitz-Greene**  
 Marco Bozzaris, 5377  
 Halt! Who goes there? 4400  
 Hamelin Town's in Brunswick, 344  
**Hamerton, S. O.**  
 Birth of Christ, The, 2152  
 Hands are such dear hands, 4854  
 Handy Pandey, Jack-a-Dandy, 4211  
 Happiest Land, The, 1784  
 Hark, hark! the dogs do bark, 728  
 Hart he loves the high wood, The, 4528  
**Harte, Bret**  
 Heathen Chinee, The, 1561  
 Haste not! Rest not, 1559  
 Have you heard of the Valley of Babyland?  
 1491  
 Have you heard of the wonderful one-hoss  
 shay? 5045  
**Hawshawe, Mrs.**  
 Common Things, 4210  
**Hay, John**  
 Enchanted Shirt, The, 96

# INDEX

- Heathen Chinese, The, 1561**  
 He comes in the night! He comes in the night,  
 in colour, 2155  
 He looked at me so curiously, 3708  
 He loves me, he don't, in colour, 4267  
 He quickly arms him for the field, 1856  
 He spoke of Burns; men rude and rough, 5050  
 He that is down needs fear no fall, 3842  
 He that would thrive, 925  
 He was a rat, and she was a rat, 4924  
 He was an apple, and she was an apple, 2724  
 Heap on more wood! the wind is chill, 2150  
 Hear the sledges with the bells, 2273  
 Hector Protector was dressed all in green, in  
 colour, 2813  
**Heine, Heinrich**  
 Lorelei, The, 1835  
**Heights by great men, The, quotation from**  
 Longfellow, 4035  
**Hemans, Felicia**  
 Better Land, The, 5240  
 Casablanca, 1276  
 Homes of England, The, 923  
 Pilgrim Fathers, The, 5138  
 Henry was every morning fed, 2126  
 Her arms across her breast she laid, 822  
 Heracitus, 5376  
**Herrbert, George**  
 Elixir, The, 3965  
 Here, a sheer hulk, lies poor Tom Bowling, 1785  
 Here am I, little Jumping Joan, 827  
 Here in this picture you can see, 4693  
 Here lies whom hound did ne'er pursue, 2127  
 Here we go round a ginger ring, 4528  
 Here we go up, up, up, 4652  
 Here's a poor widow from Babylon, in colour,  
 1565  
 Here's Sulky Sue, 3349  
**Herrick, Robert**  
 Cherry Ripe, 3346  
 Counsel to Girls, 1783  
 Fair Daffodils, 2125  
 Ternarie of Littles, A, 2810  
 To Anthea, 3793  
 Hey diddle, dinkety, poppety, pet, 3638  
 Hey, my kitten, my kitten, 4652  
 Hi, diddle diddle, 826  
 Hick-a-more, hack-a-more, 3029  
 Hickory, Dickory, Dock, with music, in colour,  
 704  
**Hickson, William Edward**  
 Try Again, 3420  
 Higgledy piggedly, here we lie, 1036  
 Higgledy piggedly, my black hen, 1277  
 High diddle ding, in colour, 2813  
 Hill of success may be steep, boys, The, 1491  
**Hill, Aaron**  
 Common natures, 3557  
 His fame shall never pass away, 1489  
 His Mother's Joy, 4525  
 Ho, for a frolic, 2720  
 Ho, ho! quoth the frog, 4015  
 Ho, my kitten, a kitten, 2922  
 Hobby-horse, The, 3028  
**Hoffman, Dr.**  
 Hunter and the Hare, The, 4692  
 Johnny Head-in-Air, 4694  
 Shock-headed Peter, 4691  
 Story of a Blackamoor, The, 4693  
 Story of Fidgety Philip, The, 4691  
 Story of Flying Robert, The, 4694  
**Hogg, James**  
 Boy's Song, 701  
 Kilmeny, 4393  
 Hohenlinden, 1035  
**Holland, Joseph Gilbert**  
 Christmas Carol, A, 3419  
**Holmes, Oliver Wendell**  
 Old Ironsides, 1558  
 Two Armies, The, 5139  
 What the Stars Have Seen, 2724  
 Wonderful One-hoss Shay, The, 5045  
 Holyrood, 5138  
 Home, Sweet Home, 470  
 Home Thoughts from Abroad, 2005  
 Homes of England, The, 923  
**Hood, Thomas**  
 Dream of Eugene Aram, The, 2123  
 I Remember, I Remember, 923  
 November in England, 4526  
 Queen Mab, 1124  
**Hood, Thomas**  
 Song of the Shirt, The, 2808  
 Hop, hop, hop, 3028  
 Horned Owl, The, 2484  
 Horse, long used to bit and bridle, A, 2480  
**Houghton, Lord**  
 Men of Old, The, 4525  
 Housekeeper, The, 4264  
 How beautiful is the rain, 5241  
 How do you do, neighbour? 3349  
 How does the water come down at Lodore? 1274  
 How doth the little busy bee, 566  
 How happy is he born or taught, 4013  
 How Horatius Kept the Bridge, 1403  
 How many miles to Babyland? 2810  
 How many miles to Babylon? 3276  
 How many pounds does baby weigh, 1784  
 How pleasant the life of a bird must be, 4210  
 How seldom, friend, a good, great man in-  
 herits, 4397  
 How They Brought the Good News, 2291  
 How to Write a Letter, 3419  
 How would Willie like to go, 5047  
**Howard, Alice G.**  
 Sorrow, 4526  
**Howe, Mrs. Julia Ward**  
 Battle-Hymn of the Republic, 4527  
**Howitt, Mary**  
 Birds in Summer, 4210  
 Old Christmas, 5048  
 Spider and the Fly, The, 3555  
**Howitt, William**  
 Wind in a Frolic, The, 348  
**Hugo, Victor**  
 Stream and the Ocean, The, 2403  
 Humpty Dumpty sat on a wall, 968  
 Hundred years to come, 5488  
 Hunt is up, the hunt is up, The, 4524  
**Hunt, Leigh**  
 Abou Ben Adhem and the Angel, 1124  
 Jenny Kiss'd Me, 3793  
 Hunter and the Hare, The, in colour, 4692  
 Hunting Song, 4524  
 Hush, baby, my dolly, I pray you don't cry,  
 3638  
 Hush-a-bye, babby, lie still with thy daddy,  
 in colour, 4267  
 Hush-a-bye, baby, 4015  
 Hush-a-bye, Baby, on the Tree Top, with  
 music, in colour, face 5615  
 Hush-a-bye, Colin, brother of mine, 4530  
 Hush'd was the evening hymn, 4207  
 Hymn of Concord, 1560  
 Hymn on the Nativity of My Saviour, A, 2151

## I

- I am monarch of all I survey, 4852  
 I am tired of planning and tolling, 4689  
 "I am writing to mother," Alice said, 1125  
 I am! yet what I am who cares or knows? 4266  
 I bring fresh showers for the thirsting flowers,  
 5239  
 I cannot do the big things, 3637  
 I come from haunts of coot and hern, 95  
 I do not like thee, Doctor Fell, 3798  
 I do not want a puppy-dog, 4858  
 I had a little boy, 4211  
 I had a little moppet, 3638  
 I had a little nut-tree, nothing would it bear,  
 in colour, 2294  
 I had a little pony, 2408  
 I had no thought of stormy sky, 5244  
 I have a little kinsman, 4396  
 I have a little shadow that goes in and out  
 with me, 96  
 I have a little sister, they call her Peep, Peep,  
 3029  
 I have been here before, 4200  
 I have had playmates, I have had companions,  
 3556  
 I have seen you, little mouse, 2726  
 I hear thee speak of the better land, 5240  
 I heard men saying: Leave hop. and praying,  
 3842  
 I know a child, and who she is, 3799  
 I know not that the men of old, 4525  
 I know not what sorrow is o'er me, 1885  
 I know this earth is not my sphere, 4014  
 I like to run along the street, 3492  
 I live for those who love me, 5047

# INDEX

- I love it, I love it, and who shall dare, 2194  
 I love little pussy, 3422  
 I love sixpence, pretty little sixpence, 1277;  
     with music, 2406  
 I love you well, my little brother, in colour,  
     4267  
 I must not throw upon the floor, 5141  
 I often sit and wish that I, 4856  
 I often wonder if our Phil, 4691  
 I once had a sweet little doll, dears, 4535  
 I Remember, I Remember, 923  
 I saw a ship a-sailing, 4652  
 I saw a sower walking slow, 3843  
 I saw three ships come sailing by, in colour,  
     2154  
 I shot an arrow into the air, 4210  
 I should like to rise and go, 1122  
 I sing the Birth was born to-night, 2151  
 I sprang to the stirrup, 2291  
 I stood and watched my ships go out, 5244  
 I stood on the bridge at midnight, 2193  
 I strove with none, for none was worth my  
     strife, 4690  
 I suppose if all the children, 5243  
 I Think When I Read, 5244  
 I Travell'd Among Unknown Men, 4921  
 I wandered lonely as a cloud, 96  
 I'd like to be a farmer, 3558  
 If all the ships I have at sea, 1782  
 If all the world were apple pie, 4652  
 If Candlemas Day be bright and fair, 1688  
 If I had as much money as I could spend, 1126  
 If I want to be happy, 5614  
 If ifs and ands, 2128  
 If no one ever marries me, 3580  
 If the old woman who lived in a shoe, 4856  
 If thou shouldst ever come by choice or  
     chance, 1882  
 If wishes were horses, 2406  
 If you are to be a gentleman, 3798  
 If you order a person to bring you some chalk,  
     3424  
 If you sneeze on Monday, you sneeze for  
     danger, 2406  
 If We Had But a Day, 3347  
 Il était une bergère, 4212  
 I'll introduce — just wait awhile, 4212  
 I'll sing you a song, 2128  
 I'll tell you a story, 2408  
 I'm a chubby little thing, 4400  
 In Absence, 1561  
 In a cottage in Fife, 3030  
 In a crack near a cupboard, with dainties pro-  
     vided, 922  
 In April, 925  
 In his chamber, weak and dying, 2807  
 In London once I lost my way, 5142  
 In marble halls as white as milk, 3029  
 In Memoriam, extracts, 3959  
 In Praise of England, 2919  
 In summer I am very glad, 3559  
 In tattered old slippers that toast at the bars,  
     5613  
 In the hollow tree in the old grey tower, 2481  
 In the name of the Empress of India, 2482  
 Inchcape Rock, The, 2125  
 Incident in a Railroad Car, An, 5050  
 Incident of the French Camp, 3966  
 Indian at the Burial-place of His Fathers, An,  
     5242  
 Industry of Animals, The, 3274  
**Ingelow, Jean**  
     Seven Times One, 3420  
     Story of Life, A, 5243  
 Ingoldsby legend: The Jackdaw of Rheims, 2647  
 Into the sunshine, 701  
 Irish Harper, The, 2403  
 Is John Smith within? 4652  
 Is there, for honest poverty, 4690  
 Is this a time to be cloudy and sad, 4266  
 Isle of Long Ago, The, 4650  
 It happened on a summer's day, 3558  
 It is a beauteous evening calm and free, 1855  
 It is common, 5243  
 It is not growing like a tree, 1856  
 It is not the thing you do, dear, 4854  
 It is the spot I came to seek, 5242  
 It little profits that an idle king, 4650  
 It matters little where I was born, 5489  
 It settles softly on your things, 5488  
 It was a summer evening, 566  
 It was nothing but a rose I gave her, 4923  
 It was roses, roses, all the way, 4651  
 It was the calm and silent night, 4920  
 It was the schooner Hesperus, 97  
 It's good to see the school we knew, 3128  
 I've watch'd you now a full half-hour, 4013  
 Ivy Green, The, 2403  

**J**

 Jack and Jill went up the hill, 486; with music,  
     5245  
 Jack Frost went out on a wintry day, 2153  
 Jack Jingle went 'prentice, 4398  
 Jack Spratt could eat no fat, 1278  
 Jack Spratt had a pig, 4016  
 Jackdaw of Rheims, The, 2647  
**Jackson, Helen E.**  
     Coronation, 5048  
     Like a blind spinner in the sun, 1885  
 Jacky, come give me thy fiddle, 2406  
 January brings the snow, 471, 1407  
 Je suis un petit poupon, 4400  
 Jealous Jack Frost, 2153  
 Jenny kiss'd me when we met, 3793  
 Jesu, Lover of my Soul, 4397  
 Jesus bids us shine, 3966  
 Jesus, tender Shepherd, hear me, 4208  
 Jim and George were two great lords, in  
     colour, 2294  
 Jock of Hazeldean, 1856  
 John Anderson, my jo, John, 3342  
 John Cook had a little grey mare; he, haw,  
     hum, 3798  
 John Gilpin was a citizen, 2641  
 Johnny Head-in-Air, in colour, 4694  
 Johnny shall have a new bonnet, 2484  
**Jonson, Ben**  
     Hymn on the Nativity of my Saviour, A, 2151  
     True Growth, 1856  
 Joy of Life, 1125  
 Judge not the workings of his brain, 1490  
 June, 2193  

**K**

**Keats, John**  
     Fairy Song, 700  
     On the Grasshopper and Cricket, 4651  
     To a Nightingale, 2722  
**Keble, John**  
     Evening Hymn, 1560  
     Rainbow, The, 1853  
**Key, Francis Scott**  
     The Star-Spangled Banner, 2005  
 Kilmeny, A Fairy Legend, 4393  
**King, Mrs. Harriet E.**  
     Crocus, The, 4688  
 King and the Abbot, The, 2401  
 King Baby on his throne, 3560  
 King Bruce and the Spider, 2479  
 King, from the council chamber came, The,  
     5240  
 King Lear and His Three Daughters, 2645  
 King of Clubs, he often drubs, The, 3638  
 King of France and four thousand men, The,  
     2294  
 King of France went up the hill, The, 2128  
 King Pippin built a fine new hall, 2484  
 King was on his throne, The, 2127  
 King was sick. His cheek was red, The, 96  
 King's Picture, The, 5240  
**Kingsley, Charles**  
     Farewell, A, 96  
     Lost Doll, The, 4525  
     Sands of Dee, The, 470  
     Three Fishers, The, 2480  
     Tide River, The, 2648  
     Ugly Princess, The, 4527  
     Young and Old, 3348  
**Kinney, Coates**  
     Rain on the Roof, 5490  
**Kipling, Rudyard**  
     Overland Mail, The, 2482  
     Recessional, The, 4854  
     Vampire, The, 5377  
 Kiss when I wake in the morning, A, 4924  
 Kitten and the Falling Leaves, The, 3420  
 Knave of Hearts, The, in colour, face 1409

# INDEX:

## L

- La Bergère, 4212  
 La boulangère a des écus, 4530  
 La plus aimable à mon gré, 4212  
 Ladder of St. Augustine, The, quotation from, 4035  
 Ladybird, fly, with music, 3023  
 Lady-bird, lady-bird, fly away home, 963  
**Lafontaine, Jean de**  
 Castle-builder, The, 3558  
 Lamb, The, 700  
**Lamb, Charles and Mary**  
 Child and the Snake, The, 2126  
 Housekeeper, The, 4264  
 Lame Brother, The, 3418  
 Old Familiar Faces, The, 3556  
 Lambs, 3559  
 Lame Brother, The, 3418  
 Lamps now glitter down the street, The, 96  
 Land of Nod, The, 1035  
 Land of Thus-and-So, The, 5047  
**Landon, Walter Savage**  
 Finis, 4690  
 Late Leaves, 3794  
 Lark-bird, lark-bird soaring high, 3559  
 Lars Porsena of Clusium, 1403  
 Last Charge of the French at Waterloo, The, 2490  
 Last Man, The, 3843  
 Last Ride Together, 5140  
 Last Rose of Summer, 1490  
 Late Leaves, 3794  
 Laughing Brook, The, 4855  
 Laughing Song, A, 3272  
 Lavender blue and rosemary green, 4016  
 Lavender's blue, diddle, diddle, with music, 4925  
 Lay me a green sod under my head, 2606  
 Lay of the Last Minstrel, The, 2809  
 Lead Kindly Light, 1995  
 Leak in the Dyke, The, 1781  
**Leary, Edwin**  
 Nonsense rhymes, 1033, 3968  
 Leaves and the Wind, The, 2292  
 Leaves are falling; so am I, The, 3794  
**Leary, James Matthew**  
 Ahab Mohammed, 4265  
 Lend me thy mare to go a mile, in colour, 4267  
 Les Petits Bateaux, 4212  
 Lesson of the Honey Bees, 2919  
 Lesson of the Water Mill, The, 4689  
 Letty's Globe, 1749  
 Life and thought have gone away, 3636  
 Life! I know not what thou art, 5244  
 Life Lesson, A, 4265  
 Life of man, The, 4396  
 Light of Our Virtues, 2920  
 Lilies of the valley chime, The, 3027  
 Like a blind spinner in the sun, 1885  
 Lion and the Mouse, The, 1125  
 Lion and the Unicorn, The, in colour, face 5614  
 Lion with the heat oppress'd, A, 1125  
**Lisle, Bouget de**  
 Marsellaise, The, 4688  
 Listen to the water mill, 4689  
 Little Betty Winkle she had a little pig, 2726  
 Little Bingo, with music, 2726  
 Little birds are singing, The, 2724  
 Little Boat, The, 4212  
 Little Bobby Snooks was fond of his books, 4016  
 Little Bo-peep has lost her sheep, with music, 1208  
 Little Boy Blue, come blow up your horn, 925  
 Little Busy Bee, The, 566  
 Little Children, Wake and Listen, 2152  
 Little cock sparrow sat on a green tree, A, 1408  
 Little drops of water, 1033  
 Little fairy comes at night, A, 1124  
 Little, I ween, did Mary guess, 4525  
 Little Jack Horner sat in a corner, 827; with music, 968  
 Little lamb, who made thee? 700  
 Little maid, pretty maid, whither goest thou? 3276  
 Little Man in Leather, The, 3350  
 Little Miss Muffet, 1277  
 Little Miss Patty and Master Paul, in colour, 3845  
 Little Nanny Etticoat, 826  
 Little old man and I fell out, A, 3275  
 Little Polly Flinders, 569  
 Little Robin Redbreast sat upon a tree, 3795  
 Little saint best fits a little shrine, A, 2810  
 Little Sister, The, 3559  
 Little Sophy by the Seaside, 1491  
 Little Star, The, 1124  
 Little stream had lost its way, A, 4690  
 Little Things, 1033  
 Little Tom Tucker, 826  
 Little Tommy Tittlemouse, 2405  
 Little White Feathers, 3277  
 Little White Lily, 3274  
 Living for self and thinking of self, 1491  
 London (in 1802), 3965  
 Long legs, crooked thighs, 3029  
**Longfellow, Henry Wadsworth**  
 Arrow and the Song, The, 4210  
 Baby and the Brook, The, 4014  
 Bridge, The, 2193  
 Builders, The, 3966  
 Children's Hour, The, 3419  
 Day is Done, The, 4922  
 Daybreak, 3793  
 Excelsior, 704  
 Happiest Land, The, 1784  
 Heights by great men reached, The, quotation, 4035  
 Norman Baron, The, 2807  
 Old Clock on the Stairs, The, 3126  
 Psalm of Life, A, 566  
 Rain in Summer, 5241  
 Serenade, 2292  
 Ship of State, The, 924  
 Ships That Pass in the Night, 4689  
 Slave's Dream, The, 1034  
 Snow Flakes, 1855  
 Song of Birds, 4527  
 Three Kings, The, 4919  
 Tide Rises, the Tide Falls, The, 4921  
 To the River Charles, 3637  
 Village Blacksmith, The, 347  
 Wreck of the Hesperus, The, 97  
 Look over the wall, and I'll tell you why, in colour, 3844  
 Lord, It Belongs Not to My Care, 4397  
 Lord my pasture shall prepare, The, 568  
 Lord, who art merciful as well as just, 3026  
 Lord Ullin's Daughter, 825  
 Lord's Prayer in Verse, The, 4396  
 Lorelei, The, 1885  
 Loss of the Royal George, The, 472  
 Lost Doll, The, 4525  
 Love and Friendship, 4854  
 Love Knot, The, 2196  
 Love Will Find Out the Way, 4689  
 Love's Reasonings, 5489  
**Lover, Samuel**  
 Angels' Whisper, The, 2808  
 Fairy Tempter, The, 3348  
**Lowell, James Russell**  
 Aladdin, 4922  
 Courtin', The, 1490  
 Fatherland, The, 924  
 Fountain, The, 701  
 Incident in a Railroad Car, An, 5060  
 June, 2193  
 Parable, A, 5139  
 Sower, The, 3843  
 Stanza on Freedom, A, 4397  
 Lucy, 700  
 Lucy Gray, 1854  
 Lucy Locket, 4398  
**Luka, Mrs.**  
 I Think When I Read, 5244  
 Lullaby! O Lullaby, 4014  
 Lullaby of an Infant Chief, 822  
**Lynn, Ethel**  
 Weighing the Baby, 1784  
 Lute-voice birds rise with the light, The, 3274  
**Lyte, H. F.**  
 Abide with me, 3965  
 Officer's Grave, The, 1785

## M

- M. N. O., with music, 3275  
**Macaulay, Lord**  
 How Horatius Kept the Bridge, 1403  
 Spanish Armada, The, 4523  
**Macdonald, George**  
 Baby, 568



# INDEX

- Macdonald, George**  
 Better Things, 5488  
 Little White Lily, 3274  
 Over the Hill, 5046  
 Wind and the Moon, The, 3128
- MacKay, Dr. Charles**  
 Deed and a Word, A, 4690  
 Love's Reasonings, 5489  
 Sea-king's Burial, The, 3417  
 William the Conqueror, 3347
- Man in the Moon, The, 2128**  
 Man in the wilderness asked me, The, 3638  
 Man's a Man for a' That, A, 4690  
 Man's Good Name, A, 2920  
 Man's Greatest Treasure, 2920
- March, 1276**  
 March Meadows, 3559  
 March winds and April showers, 2813  
 Marching down to Armageddon, 3964  
 Marco Bozzaris, 5377  
 Maria intended a letter to write, 3419
- Marslowe, Christopher**  
 Passionate Shepherd, The, 5047  
 Marseillaise, The, 4688  
 Mary had a little lamb, 5141  
 Mary had a pretty bird, 3638  
 Mary, Mary, quite contrary, 2408  
 Mary Stuart's Farewell, 2402  
 Massa's in the cold, cold Ground, 5376  
 Master I have, and I am his man, 3799  
 Matthew, Mark, Luke, and John, 827  
 Maud Müller on a summer's day, 3271
- McLellan, Isaac**  
 Death of Napoleon, The, 2293  
 Melancholy days are come, The, 4651  
 Memory, 3964  
 Men of Old, The, 4525  
 Merry are the bells, in colour, 2157  
 Merrily swinging on brier and weed, 2481  
 Mid pleasures and palaces though we may  
 roam, 470
- Miles, Alfred E.**  
 Big and Little Things, 3637
- Miller, Emily E.**  
 Jesus bids us shine, 3966
- Miller, Joaquin**  
 Bravest battle that ever was fought, The,  
 4690  
 Columbus, 567
- Miller, Thomas**  
 Industry of Animals, The, 3274  
 Mother to Her Infant, The, 3348  
 Spring Walk, The, 3128  
 Sun, The, 1491
- Miller, William**  
 Wee Willie Winkie, 822  
 Millions of massive raindrops, 4652
- Milton, John**  
 On May Morning, 1275  
 To the Lord General Cromwell, 3965  
 Milton! thou shouldst be living at this hour,  
 3965
- Mine be a cot beside a hill, 924  
 Mine eyes have seen the glory, 4527  
 Mine host of the Golden Apple, 3026  
 Minnie and Winnie, 1035  
 Minstrel Boy, The, 566  
 Miss Kitty was rude at the table one day, 569  
 Miss Poppy, 4853  
 Miss Sophy, one fine sunny day, 4014
- Mitford, Mary Russell**  
 Joy of Life, 1125  
 Molly, my sister, and I fell out, 4015  
 Monday's child is fair of face, 5141
- Montgomery, James**  
 Daisy at Christmas, A, 4922  
 Months, The, 471  
 Moon held court in Holyrood, The, 5138
- Moore, Clement C.**  
 Visit from St. Nicholas, 2195
- Moore, Thomas**  
 As down in sunless retreats, 1885  
 Canadian Boat Song, A, 3026  
 Last Rose of Summer, 1490  
 Love and Friendship, 4854  
 Minstrel Boy, The, 566  
 Oft in the Still Night, 3794  
 She is Far From the Land, 3556  
 Sound the Loud Timbrel, 5376  
 Morning and Evening, 1849  
 Morning, evening, noon, and night, 4207
- Morris, George P.**  
 Beech Tree's Petition, The, 471
- Morris, William**  
 Voice of Toil, The, 3842  
 Mother, 1558  
 Mother, may I go and bathe? 4528  
 Mother Mitchell one day lost her pussy, alack,  
 4630  
 Mother, mother, the winds are at play, 5488  
 Mother to Her Infant, The, 3348  
 Mother's Kisses, 1125  
 Mountain and the Squirrel, The, 924  
 Mouse and the Cake, The, 4209  
 Mouse found a beautiful piece of plum-cake, A,  
 4209  
 Mr. East gave a feast, 4528  
 Muffled drums' sad roll has beat, The, 5379
- Mulock, Dinah Maria**  
 Douglas, Douglas, Tender and True, 1884  
 Multiplication is vexation, 925  
 Musical Instrument, A, 1783  
 My banks they are furnished with bees, 1033  
 My beautiful! my beautiful! that standest  
 meekly by, 702  
 My country, 'tis of thee, 3636  
 My dear, do you know, 4529  
 My faith looks up to Thee, 4206  
 My fairest child, I have no song to give you,  
 96  
 My father he died, in colour, 2295  
 My father he left me three acres of land, 3030  
 My good blade carves the casques of men,  
 1032  
 My heart aches, and a drowsy numbness pains,  
 2722  
 My Heart's in the Highlands, 1560  
 My heart leaps up when I behold, 701  
 My house is red—a little house, 3422  
 My Lady Wind, 5491  
 My little old man and I fell out, 2128  
 My lov'd, my honour'd, much respected friend,  
 4011  
 My Maid Mary, in colour, 2154  
 My Maryland, 2452  
 My Menagerie, 2194  
 My mind lets go a thousand things, 3964  
 My mind to me a kingdom is, 2648  
 My Mother, 822  
 My Old Kentucky Home, 3346  
 My parents bow, and lead me forth, 4527  
 My parents sleep both in one grave, 3418  
 My Playmate, 4920  
 My Shadow, 96  
 My Ships, 1782  
 My soul, there is a country, 3966  
 My strength is failing fast, 3417  
 My true love hath my heart, and I have his,  
 3793

N

- Name in the Sand, A, 4208  
 Nathan Hale, 1569  
 Nation's Strength, A, 4525  
 Nesting Hour, The, 3559  
 New Pelisse, The, 3559
- Newbolt, Henry**  
 Best School of All, The, 3128
- Newman, Cardinal**  
 Lead, Kindly Light, 1995  
 Nick and a nock, A, 4016  
 Nightingale and the Glow-worm, The, 700  
 Nightingale, that all day long, A, 700  
 No need to the circus to go have I, 2194  
 No stir in the air, no stir in the sea, 2125  
 No sun, no moon, 4526  
 No, trust me; she is peevish, sullen, froward,  
 2920  
 Noblest Roman, The, 2919  
 Noon was shady, and soft airs, The, 2126  
 Norman Baron, The, 2807  
 North wind doth blow, The, 1124
- Norton, Hon. Mrs.**  
 Arab's Farewell to His Steed, The, 702  
 Not a drum was heard, not a funeral note, 701  
 Not gold, but only man can make, 4526  
 November in England, 4526  
 Now, all of you, give heed unto, 4652  
 Now, he who knows old Christmas, 5048  
 Now the bright morn'ng star, day's harbinger,  
 1275

# INDEX

Now the day is over, 5490  
Now, what do you think, in colour, 4267  
Nurse's Song, 1856

O

O all you little Blackie-tops, in colour, 765  
O blithe new-comer, I have heard, 1883  
O, Boys, Carry me 'Long, 2194  
O Captain! my Captain, 2005  
O fir-tree fine, 3028  
O God! it is a fearful thing, 3125  
O God! methinks it were a happy life, 2918  
O God, our help in ages past, 1785  
O leave this barren spot to me, 471  
O little lambs, the month is cold, 3559  
O Mammy's Pickaninny, 4855  
O Mary, go and call the cattle home, 470  
O Mother-My-Love, if you'll give me your hand, 3797  
O, my love's like a red, red rose, 5047  
O! say, can you see, by the dawn's early light, 2005  
O, say, what is that thing call'd light, 1033  
O Thou that sendest out the man, 4649  
Ode on Immortality, 3633  
Ode on the Death of Wellington, 4647  
O'er a low couch the setting sun, 4208  
Of a' the airts the wind can blow, 5140  
Of all the gay birds that e'er I did see, 3795  
Of all the girls that are so smart, 3793  
Of all the thoughts of God that are, 5377  
Of Nelson and the North, 1854  
Officer's Grave, The, 1785  
Oft I had heard of Lucy Gray, 1854  
Oft in the Stilly Night, 3794  
**Ogilvie, Will H.**  
Apple Winds, The, 5244  
Hollyrood, 5138  
Oh, a dainty plant is the ivy green, 2403  
Oh, a wonderful stream is the river of Time, 4650  
Oh, hush thee, my baby, thy sire was a knight, 822  
Oh, Look at the Moon, 3026  
Oh, my pretty cock, 3421  
Oh, ring the bells, 3349  
Oh, to be in England, 2005  
Oh, where and oh where is my little wee dog? 4528  
Oh, where are all the good little girls? 3277  
Oh, who is so merry, 2922  
Oh, who would keep a little bird confined? 3558  
Oh, young Lochinvar is come out of the West, 4687  
**O'Hara, Theodore**  
Bivouac of the Dead, The, 5379  
Old Abram Brown is dead and gone, 2128  
Old Arm Chair, The, 2194  
Old Christmas, by Mary Howitt, 5048  
Old Christmas, by Sir Walter Scott, 2150  
Old Cloak, The, 3794  
Old Clock on the Stairs, The, 3126  
Old Familiar Faces, The, 3556  
Old Folks at Home, 1558  
Old King Cole was a merry old soul, 4856; with music, 4857  
Old Ironsides, 1558  
Old Mother Hubbard, 2483  
Old Mother Twitchett had but one eye, 3029  
Old woman, old woman, shall we go shearing? 3276  
Old Woman, Tossed up in a Blanket, with music, 1688  
Omission, 4854  
On came the whirlwind — like the last, 2490  
On Christmas Eve I turned the spit, 4398  
On Linden, when the sun was low, 1035  
On May morning, 1275  
On Saturday night, 3638  
On Sir Philip Sidney, 5487  
On the bridge of Avignon, 5142  
On the Grasshopper and Cricket, 4651  
On the green banks of Shannon, when Sheelah was nigh, 2403  
Once in Persia ruled a king, 471  
Once in Royal David's City, 2152  
Once on a time I saw a bear, 2484  
Once upon a midnight dreary, 4263  
One and one, 3277

One hot summer day a hunter went out, 4694  
One, I love; two, I love, 2922  
One lesson, Nature, let me learn of thee, 5242  
One misty morning, 3350  
One misty, moisty morning, in colour, 2813  
One not learned, save in gracious household ways, 1555  
One, two, buckle my shoe, in colour, 2814  
One, two, three, four, five, 3421  
One was a king, and wide domain, 5489  
Only a Baby Small, 2723  
Only a Boy, 5374  
Opportunity, 4396  
**O'Reilly, John Boyle**  
Cry of the Dreamer, The, 4689  
Orpheus with his lute made trees, 2915  
**O'Shaughnessy, Arthur**  
Work of the Poets, The, 4266  
Others abide our question. Thou art free, 4012  
Our band is few, but true and tried, 1559  
Out of the bosom of the air, 1855  
Out of the frozen earth below, 4688  
Out of the uncharted, unthinkable dark, 5489  
Over hill, over dale, 2915  
Over the Hill, 5046  
Over the mountains, 4689  
Over the river and through the wood, 4855  
Overland Mail, 2482  
Owl, The, 4688  
Owl and the Pussy Cat, The, 5141

P

**Palmer, Ray**  
Faith, 4206  
Pan! Qu'est-ce qu'est là? 4400  
Papa, les petits bateaux, 4212  
Parable, A, 5139  
Parrot, The, 1276  
Parrot, from the Spanish Main, A, 1276  
Passing through a little wood, 4925  
Passionate Shepherd, The, 5047  
Pat-a-cake, pat-a-cake, baker's man, 1036  
Patriot, The, 4651  
**Payne, John Howard**  
Home, Sweet Home, 470  
Peace, 3966  
**Peacock, Thomas Love**  
Priest and the Mulberry Tree, The, 3272  
Peasant stood before a king and said, A, 4265  
Pease-pudding hot, 1277  
Peg, peg, with a wooden leg, 3638  
Pemmy was a pretty girl, 1858  
Perilous life, and sad as life may be, A, 1276  
**Perry, Nora**  
Love Knot, The, 2196  
Pet Lamb, The, 1881  
Peter Bell: A Tale, 3963  
Peter, Peter, pumpkin eater, 4015  
Peter Piper picked a peck of pickled pepper, 826  
Peter White will ne'er go right, 968  
Pictures in the Fire, 824  
Pie sat on a pear-tree, A, 3030  
Pied Piper of Hamelin, The, 344  
**Pierpont, John**  
Warren's Address, 2292  
Pilgrim, The, 2004  
Pilgrim Fathers, The, 5138  
Pines were dark on Ramoth Hill, The, 4926  
Piping Down the Valleys Wild, 5376  
Planting the Apple-tree, 5240  
**Platt, John James**  
Rose and Root, 3964  
Playgrounds, 3559  
Please to remember, 4528  
**Poe, Edgar Allan**  
Bells, The, 3273  
Raven, The, 4263  
Poet and the Bird, The, 5489  
Poet's cat, sedate and grave, A, 1784  
Poet's Last Thoughts, A, 4266  
Poetry of earth is never dead, The, 4651  
Polly, put the kettle on, 925  
Polly's, Peg's, and Poppety's, 3845  
Poor babes in the wood, The, in colour, 4529  
Poor Billy boy was music mad, 3277  
Poor Dicky's dead, 3421  
Poor Dog Tray, 3272  
Poor old Robinson Crusoe, 4528  
Praise of England, The, 2919  
Prayer, A, 3026

# INDEX

Pretty flowers, tell me why, 4926  
 Pretty maid, pretty maid, 1277  
 Priest and the Mulberry Tree, The, 3272  
 Prince Flinikin and his mamma, 3844  
 Princess, The, 4527  
**Pringle, Thomas**  
 Afar in the Desert, 1885  
 Prisoner of Chillon, The, 3125  
**Froster, Adelaide Anne**  
 Pictures in the Fire, 824  
**Froster, Bryan Waller**: see Cornwall, Barry  
 Prosopice, 1032  
 Psalm of Life, A, 566  
 Punch and Judy fought for a pie, 4015  
 Pure, the bright, the beautiful, The, 2723  
 Purest treasure mortal times afford, The, 2920  
 Pussy cat ate the dumplings, 3795  
 Pussy cat, pussy cat, where have you been?  
 2407  
 Pussy sits beside the fire, in colour, 4267  
 Pussy-cat Mew jumped over a coal, 4016  
 Pussy-cat Mole, 2408

## Q

Quality of mercy is not strained, The, 2920  
 Queen and the Flowers, The, 1883  
 Queen Anne, Queen Anne, she sits in the sun,  
 3030  
 Queen Mab, 1124  
 Queen of Hearts, The, face 1409  
 Quiet Work, 5242

## R

Rain, 94  
 Rain in Summer, 5241  
 Rain is raining all around, The, 94  
 Rain on the Roof, 5490  
 Rainbow, The, by John Keble, 1853  
 Rainbow, The, by Wordsworth, 701  
**Raleigh, Sir Walter**  
 Conclusion, The, 3842  
 Ramène Tes Moutons, 4212  
**Randall, James Ryder**  
 My Maryland, 2482  
 Why the Robin's Breast is Red, 3964  
**Rands, William Brighty**  
 The World, 824  
 Raven, The, 4263  
 Raven and the Oak, The, 2404  
**Read, T. Buchanan**  
 Sheridan's Ride, 2293  
 Reaper, The, 1561  
 Recessional, The, 5854  
 Red, Red Rose, A, 5047  
 Retired Cat, The, 1784  
 Revenge, The, 4205  
 Ride away, ride away, Johnny shall ride, 2154  
**Riley, James Whitcomb**  
 Land of Thus-and-So, The, 5047  
 Life Lesson, A, 4265  
 Ring Out, Wild Bells, 2153  
 Ring the bells — ring, 4398  
 Ring-ting! I wish I were a primrose, 1033  
 River, The, 2810  
 River that in silence windest, 3637  
 Robert Barnes, fellow fine, 3030  
 Robert of Lincoln, 2481  
 Robin and Richard were two pretty men, 827  
 Robin and the red-breast, The, 3349  
 Robin and the wren, The, 3638  
 Robin Hood, Robin Hood, 4856  
 Robin Redbreast, 472  
 Robin the Bobbin, the big, greedy Ben, 2406  
 Robin-a-Bobin, 4016  
 Robin-Friend has gone to bed, 3559  
 Rock-a-by, baby, thy cradle is green, 3799  
 Rock-a-by Lady, The, 4923  
 Rock of Ages, 3026  
**Rogers, Samuel**  
 Ginevra, 1882  
 Wish, A, 924  
 Roguey, Poguey Bogle Man, A, 4654  
**Roscoe, William**  
 Butterfly's Ball, The, 1034  
 Rose aloft in sunny air, The, 3964  
 Rose and Root, 3964  
 Rose is red, The, 4398

**Rossetti, Christina**  
 Goblin Market, 1849  
 Up-Hill, 4683  
**Rossetti, D. G.**  
 Sudden Light, 4209  
 Round de meadows am a-ringing, 5376  
 Rowley Powley, pudding and pie, 569  
 Rub-a-dub-dub, 3421  
 Rule, Britannia, 568

## S

Sad Ventures, 5244  
 Said a people to a poet, 5489  
 Said the wind to the moon, I will blow you  
 out, 3128  
 Sail on, sail on, O ship of state, 924  
 St. Swithin's Day, if thou dost rain, 1688  
 Sally in our Alley, 3793  
 Sammy Smith would drink and eat, 922  
 Sandpiper, The, 4266  
 Sands of Dee, The, 470  
**Sanger, Margaret**  
 Omission, 4854  
 Saviour bowed beneath His cross, The, 3964  
 Say not, because he did no wondrous deed, 5374  
 Say Not the Struggle Naught Availeth, 3274  
 Scots, wha hae wi' Wallace bled, 824  
**Scott, Sir Walter**  
 Jock of Hazeldean, 1856  
 Last Charge of the French at Waterloo, The,  
 2480  
 Lay of the Last Minstrel, The, 2809  
 Lullaby of an Infant Chief, 822  
 Old Christmas, 2150  
 Sound Loud the Clarion, 3348  
 Time, 5374  
 Young Lochinvar, 4687  
 Seal the sea! the open sea! The, 4852  
 Sea-gull, sea-gull, sit on the sand, 1036  
 Sea-king's Burial, The, 3417  
 See the kitten on the wall, 3420  
 See-saw, Margery Daw, with music, 826  
 See-saw, sacaradown, 2484  
 Serenade, 2292  
 Seven Ages of Man, The, 2921  
 Seven Times One, 3420  
 Shades of night were falling fast, The, 704  
 Shakespeare, 4013  
**Shakespeare, William**  
 Ariel's Song, 317  
 As You Like It, extracts from, 2915, 2921  
 Court of Fairyland, in colour, face, 332  
 Friends and Flatterers, 2920  
 Hamlet, extract from, 2920  
 Julius Caesar, extracts from, 94, 2917, 2919, 2921  
 King Henry IV., extract from, 2921  
 King Henry V., extracts from, 2919  
 King Henry VI., extracts from, 2918, 2921  
 King Henry VIII., extracts from, 2915, 2916  
 King John, extracts from, 2919, 2921  
 King Lear, extracts from, 2915  
 Love's Labour's Lost, extracts from, 2915,  
 2921  
 Macbeth, extract from, 2921  
 Measure for Measure, extracts from, 2920, 2921  
 Merchant of Venice, The, extracts from, 2920,  
 2921  
 Midsummer Night's Dream, A, extracts  
 from, 2915  
 Othello, extract from, 2920  
 Richard II., extracts from, 2919, 2920  
 Sayings from Shakespeare, 2921  
 Silvia, 3842  
 Songs from Shakespeare, 2915  
 Troilus and Cressida, extract from, 2921  
 Two Gentlemen of Verona, extract from, 2920  
 Shall I sing? says the lark, 3349  
 She dwelt among the untrodden ways, 700  
 She has laughed as softly as she sighed, 4209  
 She is far from the land, 3556  
 She Walks in Beauty, 3347  
 She Was a Phantom of Delight, 3347  
 Shed no tear! O, shed no tear, 700  
**Shelley, Percy Bysshe**  
 Autumn, 2193  
 Cloud, The, 5239  
 Skylark, The, 5137  
**Shenstone, William**  
 Shepherd's Cot, The, 1033

# INDEX

- Shepherd boy's song in Pilgrim's Progress, 3842  
 Shepherd's Cot, The, 1033  
 Shepherd's Happy Life, The, 2918  
 Shepherdess, The, 4212  
 Sheridan's Ride, 2293  
 Ship of State, The, 924  
 Ships That Pass In the Night, 4689  
 Shock-headed Peter, in colour, 4691  
 Should auld acquaintance be forgot, 3274  
 Shuffle-Shoon and Amher-Locks, 'n colour, 3841  
**Sidney, Sir Philip**  
   Bargain, The, 3793  
 Sigh, A, 4922  
**Sigourney, Mrs.**  
   Silence augmenteth grief, writing increaseth  
     rage, 5487  
 Silent Voices, The, 2194  
**Sill, Edward Rowland**  
   Opportunity, 4396  
 Silvia, 3842  
 Simon Brodie had a cow, 3638  
 Simple Simon met a plemman, 5246  
 Sing a song of sixpence, with music, 705  
 Sing, sing, what shall I sing? 826  
 Sir Galahad, 1032  
 Sir Sidney Smith, 1853  
 Skylark, The, 5137  
 Slave's Dream, The, 1034  
 Sleep, The, 5377  
 Sleep, baby, sleep, 3276  
 Sleep, Beauty Bright, 1857  
 Sleep, sonny darling, your mother's delight, 3027  
 Sluggard, The, 709  
 Slumber, my darling, no danger is near, 3348  
**Smith, Samuel Francis**  
   My country, 'tis of thee, 3636  
 Snow Flakes, 1855  
 Snow Storm, The, 3348  
 So are the stars and the arching skies, 5243  
 So work the honey bees, 2919  
 Solitude, 4649  
 Solomon Grundy, 2407  
 Some little mice sat in a barn to spin, 2726  
 Somebody crawls into mamma's bed, 564  
 Somebody's Mother, 5241  
 Somewhat back from the village street, 3126  
 Somewhere it is always light, 1431  
 Son of My Heart, 3027  
 Song of Birds, 4527  
 Song of Marlon's Men, 1559  
 Song of the Camp, A., 1884  
 Song of the Shirt, The, 2808  
 Song of the Two Hares, The, 3027  
 Sorrow, 4526  
 Sound Loud the Clarion, 3348  
 Sound the Loud Timbrel, 5376  
**Southey, Robert**  
   Battle of Blenheim, The, 565  
   Cataract of Lodore, The, 1274  
   Father William, 566  
   Inchcape Rock, The, 2125  
   Traveller's Return, The, 2125  
   Prayer, A, 3026  
 Sower, The, 3843  
 Spacious Firmament on High, The, 4014  
 Splendour falls on castle walls, 3347  
**Spofford, Harriet Prescott**  
   Sigh, A, 4922  
 Spanish Armada, The, 4523  
 Speak Gently, 4265  
 Spider and the Fly, The, 3555  
 Spring Walk, The, 3126  
 Stand! the ground's your own, my braves, 2292  
 Stanza on Freedom, A, 4397  
 Star-Spangled Banner, 2005  
 Stars, The, 704  
 Stars of the summer night, 2292  
 Stately homes of England, The, 923  
**Stedman, Edmund Clarence**  
   Discoverer, The, 4396  
**Stevenson, Robert Louis**  
   Armies in the Fire, 95  
   Land of Nod, The, 1035  
   My Shadow, 95  
   Rain, 94  
   Travel, 1122  
   Unseen Playmate, The, 702  
**Stoddard, Richard Henry**  
   Birds, 3965  
   Flight of the Arrow, The, 4396  
   Flight of Youth, The, 5242  
 Stormy Petrel, The, 4526  
 Story of a Blackamoor, The, in colour, 4693  
 Story of Fidgety Philip, The, in colour, 4691  
 Story of Flying Robert, The, in colour, 4694  
 Story of Life, A, 5243  
 Stream and the Ocean, The, 2403  
 Streamlet down from the mountainous glen,  
   The, 2403  
 Strong Son of God, Immortal Love, 3959  
 Sudden Light, 4209  
 Sum, sum, sum, 3970  
 Summer is a-coming in, 2132  
 Sun, The, 1491  
 Sun is a glorious thing, The, 4210  
 Sun is careering in glory and might, The,  
   1125  
 Sun is down, and time gone by, The, 1035  
 Sun of my soul, thou Saviour dear, 1560  
 Sun was falling off to sleep, The, 5380  
 Sun was shining on the sea, The, 1562  
 Sunset and evening star, 1561  
 Sunshiny shower, A, 2128  
 Sunshine bright in the old Kentucky home,  
   The, 3346  
 Suppose the Little Cowslip, 5140  
 Sur le pont d'Avignon, 5142  
 Swarm of bees in May, A, 1568  
 Sweet and low, sweet and low, 470  
 Sweet is Childhood, 5243  
 Sweet to the morning traveller, 2125  
 Sweetest Lives, The, 1558

## T

- Tabb, John Banister**  
   In Absence, 1561  
 Taffy was a Welshman, Taffy was a thief, 1036  
**Tate, Nahum**  
   Twenty-third Psalm, The, 568  
**Taylor, Bayard**  
   Bedouin Song, 5046  
   Song of the Camp, A, 1884  
**Taylor, Benjamin Franklin**  
   Isle of Long Ago, The, 4650  
**Taylor, Jane**  
   Good-night, 472  
   Horse, The, 2480  
   Little Star, The, 1124  
   My Mother, 822  
**Taylor, Jeffreys**  
   Lion and the Mouse, The, 1125  
   Young Mouse, The, 922  
 Teach me, my God and King, 3965  
 Tears, Idle Tears, 1783  
 Teeny-Weeny, 5492  
 Tell me not, in mournful numbers, 566  
 Tell tale tit, 1568  
 "Temple to Friendship," said Laura, en-  
   chanted, A, 4854  
 Tender-handed stroke a nettle, 3557  
**Tennyson, Alfred, Lord**  
   Beggar Maid, The, 822  
   Break, Break, Break, 5046  
   Brook, The, 95  
   Bugle, The, 3347  
   Charge of the Light Brigade, The, 1782  
   Cradle Song, 1857  
   Crossing the Bar, 1561  
   Death of the Old Year, 2153  
   Defence of Lucknow, The, 3791  
   Deserted House, The, 3636  
   England and America in 1782, 4649  
   In Memoriam, 3959  
   Locksley Hall, extract from, 5243  
   Minnie and Winnie, 1035  
   Mother, 1558  
   Ode on the Death of Wellington, 4647  
   Owl, The, 4688  
   Princess, The, a selection, 4527  
   Quotations from, 3863, 4746  
   Revenge, The, 4205  
   Ring Out, Wild Bells, 2153  
   Silent Voices, The, 2194  
   Sir Galahad, 1032  
   Sweet and Low, 470  
   Tears, Idle Tears, 1783  
   Ulysses, 4650  
**Tennyson-Turner, C.**  
   Lett's Globe, 1749  
   Little Sophy by the Seaside, 1491

# INDEX

- Ternarie of Littles, A, 2810  
 Terrible Ball, The, 1857  
**Thackeray, William Makepeace**  
 Cane-bottomed Chair, The, 5613  
 Tragic Story, A, 1125  
 Thanksgiving Day, 4855  
**Thaxter, Celia**  
 Sandpiper, The, 4266  
 The despot's heel is on thy shore, 2482  
 There are gains for all our losses, 5242  
 There are sounds like flakes of snow falling, 3427  
 There is a flower, a little flower, 4922  
 There is a pleasure in the pathless woods, 4649  
 There is in the wide, lone sea, 1785  
 There, little girl, don't cry, 4265  
 There lived a sage in days of yore, 1125  
 There once was a bird that lived up in a tree, 5050  
 There sat one day in quiet, 1784  
 There was a fern on the mountain, 4853  
 There was a frog lived in a well, 5245  
 There was a jolly miller, 2813  
 There was a king in olden days, 1883  
 There was a king met a king, 3029  
 There was a little boy and a little girl, 2128  
 There was a little boy went into a field, 2726  
 There was a little girl, who had a little curl, 569  
 There was a little man, and he had a little gun, 3799  
 There was a little man who wooed a little maid, 4211  
 There was a little rabbit sprig, 1568  
 There was a man, and he had naught, in colour, 1564  
 There was a man, and he went mad, 1278  
 There was a man of Thessaly, 3030  
 There was a monkey climbed up a tree, 1037  
 There was a sound of revelry by night, 5378  
 There was a time when meadow, grove, and stream, 3633  
 There was a young lady of Bute, 1038  
 There was a young lady of Portugal, 3968  
 There was a young lady of Russia, 3969  
 There was a young lady of Troy, 646  
 There was a youth, a well beloved youth, 5374  
 There was an old lady all dressed in silk, 3277  
 There was an old lady of Chertsey, 3968  
 There was an old man, 4211  
 There was an old man at a casement, 3969  
 There was an old man in a boat, 3969  
 There was an old man in a pew, 3968  
 There was an old man in a tree, 569  
 There was an old man of Aosta, 3968  
 There was an old man of Apulia, 3968  
 There was an old man of Coblenz, 1038  
 There was an old man of Corfu, 1038  
 There was an old man of Kilkenny, 1038  
 There was an old man of Nepal, 3969  
 There was an old man on some rocks, 3969  
 There was an old man who said Hush, 1038  
 There was an old man with a flute, 3969  
 There was an old man with a poker, 3968  
 There was an old person of Basing, 3968  
 There was an old person of Chilli, 3969  
 There was an old person of Dover, 3969  
 There was an old person of Dutton, 1038  
 There was an old person of Mold, 1038  
 There was an old person of Rhodes, 3968  
 There was an old person of Sparta, 1038  
 There was an old woman, and what do you think, 2408  
 There was an old woman, as I've heard tell, in colour, face 925  
 There was an old woman called Nothing-at-all, 2922  
 There was an old woman lived under a hill, 827  
 There was an old woman toss'd in a blanket, with music, 1688  
 There was an old woman tossed up in a basket, in colour, face 3030  
 There was an old woman who had three sons, 4652  
 There was an old woman who lived in a shoe, in colour, face 924  
 There was an owl lived in an oak, 2922  
 There were once two cats of Kilkenny, 4016  
 There were three jolly Welshmen, 4399  
 There were three sisters in a hall, 4015  
 There were two blackbirds, 827  
 There's a dear little home in Good-Children Street, 2006  
 There's a neat little clock, 3275  
 There's a song in the air, 3419  
 There's all the difference in the world, 3370  
 There's no dew left on the daisies and clover, 3420  
 There's nothing like a daddie, 4858  
 There's Room at the Top, 1491  
 There's something in a dying horse, 3963  
 They are slaves who fear to speak, 4397  
 They are such tiny feet, 4014  
 They glide upon their endless way, 704  
 They say that God lives very high, 568  
 They that wash on Friday, 3275  
 They told me, Heraclitus, they told you were dead, 5376  
 Things That Never Die, 2723  
 Thirty days hath September, 826  
 Thirty white horses upon a red hill, 3029  
 This England never did, nor never shall, 2919  
 This I beheld, or dreamed it in a dream, 4396  
 This little pig went to market, 827  
 This royal throne of kings, this scepter'd isle, 2919  
 This was the noblest Roman of them all, 2919  
 This winter's weather it waxeth cold, 8794  
 Thomas A. Tattamus took two T's, 4211  
**Thomson, James**  
 Rule, Britannia, 568  
**Thorpe, Rose Martwick**  
 Curfew Bell, The, 3025  
 Thousand miles from land are we, A, 4526  
 Three Blind Mice, with music, 925  
 Three fishers went sailing away to the west, 2480  
 Three hunters together a deer-stalking went, 3846  
 Three kings came riding from far away, in colour, 4919  
 Three little girls were sitting on a rail, 3845  
 Three Old Ladies, The, 3277  
 Three tabbies took out their cats to tea, in colour, 3845  
 Three wise men of Gotham, 2408  
 Three Years She Grew, 4921  
 Thy Way, Not Mine, O Lord, 4013  
 Thyself and thy belongings, 2920  
 Tide rises, the tide falls, The, 4921  
 Tide River, The, 2648  
 Tiger, tiger, burning bright, 1125  
**Tilton, Theodore**  
 All Things shall Pass Away, 471  
 Time, 5374  
 'Tis a lesson you should heed, 3420  
 'Tis the last rose of summer, 1490  
 'Tis the voice of a sluggard; I heard him complain, 700  
 Tit-tat-toe, 4211  
 To a Butterfly, 4013  
 To a Mountain Daisy, 4524  
 To a Nightingale, 2722  
 To a Skylark, 5490  
 To the River Charles, 3637  
 To a Waterfowl, 2810  
 To Anthea, 3793  
 To drum-beat and heart-beat, 1559  
 To market, to market, to buy a fat pig, 827  
 To the Cuckoo, by Wordsworth, 1883  
 To the Fringed Gentian, 4855  
 To the Lord General Cromwell, 3965  
 To the Skylark, 2127  
 Toll for the brave, 472  
 Tom Bowling, 1785  
 Tom, Tom, the piper's son, 2407  
**Toplady, Augustus M.**  
 Rock of Ages, 3026  
 Tragic Story, A, 1125  
 Travel, 1122  
 Traveller, what lies over the hill? 5046  
 Traveller's Return, The, 2125  
 Trip upon trendies, in colour, 3639  
 True Greatness, 2723  
 True Growth, 1856  
 Try again, 3420  
 Turn, turn, thy hasty foot aside, 1856  
**Turner, Charles Tennyson**: see Tennyson-Turner, Charles

# INDEX

**Turner, Mrs. Elizabeth**  
 Ambitious Sophy, 4014  
 Greedy Boy, The, 322  
 How to Write a Letter, 3419  
 'Twas in the prime of summer-time, 2123  
 'Twas on a summer morning, 4853  
 'Twas once upon a time, 3795  
 'Twas the night before Christmas, when all  
 through the house, 2195  
 Tweedledum and Tweedledee, in colour, face  
 5380  
 Twenty-third Psalm, The, 563  
 Twilight Song, A, 3559  
 Twinkle, twinkle, little star, 1124  
 Twixt a hill and hollow, hollow pass, 3027  
 Two Armies, The, 5139  
 Two little boys named Willie, 3724  
 Two little dogs sat by the fire, 3638  
 Two little dogs were basking in the cinders,  
 3795  
 Two little girls are better than one, 3277  
 Two little kittens, one stormy night, in colour,  
 4268  
 Two Men, 5489  
 Two Robin Redbreasts built their nest, 3799  
 Two sticks and an apple, 1126  
 Tying her bonnet under her chin, 2196

## U

Ugly Princess, The, 4527  
 Ulysses, 4650  
 Uncle Sam's Young Army, 3418  
 Under a spreading chestnut tree, 347  
 Under a toadstool, 3967  
 Under the greenwood tree, 2915  
 Under the wide and starry sky, 2316  
 Under the window in my garden, in colour, 3844  
 Underneath an old oak-tree, 2404  
 Unseen Playmate, The, 702  
 Up from the meadows rich with corn, 4851  
 Up from the South at the break of day, 2293  
 Up hill and down dale, 3276  
 Up the airy mountain, 567  
 Up with me! up with me into the clouds, 5490  
 Up-Hill, 4688  
 Upon a time a neighing steed, 3127  
 Upon St. Paul's steeple stands a tree, 3799  
 Upon yon nearest rock top, 5141  
 Useful Plough, The, 1276

## V

Valediction, A 1558  
 Vampire, The, 5377  
**Van Dyck, Dr.**  
 God sends Love to You, 3419  
**Vaughan, Henry**  
 Peace, 3966  
 Village Blacksmith, The, 347  
 Vision of Belshazzar, The, 2127  
 Vision of the Future, A, 5243  
 Visit from St. Nicholas, A, 2195  
 Voice of Toil, The, 3842

## W

Waken, Christian children, 2152  
 Walrus and the Carpenter, The, in colour,  
 1562  
 Warm sun is falling, The, 2193  
 Warren's Address to the American soldiers,  
 2292  
 Wash me and comb me, 3276  
 Wassail! wassail! all over the town, in colour,  
 4269  
**Watts, Isaac**  
 Little Busy Bee, The, 566  
 O God, our Help in Ages Past, 1785  
 Sluggard, The, 700  
**Waugh, Edwin**  
 Christmas Morning, 2151  
 Way down upon the Swanee River, 1558  
 Way was long, the wind was cold, The, 2809  
 Wayward Daughter's Fate, The, 2920  
 We are all in the dumps, in colour, 2813  
 We are the music-makers, 4266  
 We are three brethren out of Spain, 3798

We are Uncle Sam's young army, 3418  
 We had a pleasant walk to-day, 3126  
 We have been o'er land and sea, in colour, face  
 332  
 We live in deeds, not years; in thoughts, not  
 breaths, 1033  
 We should fill the hours with the sweetest  
 things, 3347  
**Weatherly, Frederic E.**  
 Discontented Apples, The, 2724  
 Jealous Jack Frost, 2152  
 Miss Poppy, 4853  
 River, The, 2810  
 What Bobbie Would Like, 3558  
 What Might Have Been, 2724  
 Wee, modest, crimson-tipped flower, 4524  
 Wee Willie Winkle, in colour, 822, 2813  
 Weighing the Baby, 1784  
 Were I a birdie too, 3027  
**Weasley, Charles**  
 Gentle Jesus, meek and mild, 5243  
 Jesu, Lover of my Soul, 4397  
**Westwood, Thomas**  
 Mine Host of the Golden Apple, 3026  
 Wet sheet and a flowing sea, A, 4524  
 What are little boys made of? 2408; with music,  
 5142  
 What Bobbie Would Like, 3558  
 What Does It Matter, 5489  
 What does little birdie say, 1857  
 What Every Wise Child Should do, 5614  
 What Everyone Knows, 824  
 What I live for, 5047  
 What is it you ask me, darling? 824  
 What is the meaning of thy song, 5489  
 What is the news of the day? in colour, 2813  
 What is the rhyme for porridge? 2154  
 What Might Have Been, 2724  
 What the Stars Have Seen, 2724  
 What's he that wishes so? 2919  
 What was he doing, the great god Pan, 1783  
 When all the world is young, lad, 3348  
 When Britain first, at Heaven's command, 568  
 When cats run home and light is come, 4688  
 When children are playing alone on the green,  
 702  
 When Eve had led her lord away, 2724  
 When Freedom from her mountain height, 1894  
 When good King Arthur ruled this land, in  
 colour, 1566  
 When I was a bachelor, 2725  
 When I was a beggarly boy, 4922  
 When I was a little boy, 965  
 When I'm put to bed to-day, 3422  
 When icicles hang by the wall, 2915  
 When in the morning we arise, 2410  
 When Letty had scarce pass'd her third glad  
 year, 1749  
 When little Fred was called to bed, 2128  
 When little Sammy Soapsuds, 1126  
 When on my day of life the night is falling,  
 3636  
 When the British warrior queen, 470  
 When the dumb Hour clothed in black, 2194  
 When the green woods laugh with the voice of  
 joy, 3272  
 When the humid shadows hover, 5490  
 When the snow is on the ground, in colour, 4267  
 When the voices of children are heard on the  
 green, 1856  
 When 'tis pouring fast with rain, 4694  
 Where are you going to, my pretty maid? with  
 music, 1126  
 Where did you come from, baby dear? 568  
 Where do you come from, river sweet? 2810  
 Where have you been, my boy Tammie? 4653  
 Where is the true man's fatherland? 924  
 Where the bee sucks, there suck I, 317  
 Where the pools are bright and deep, 701  
 Which I wish to remark, 1561  
 Where, where will be the birds that sing, 5488  
 While We May, 4854  
 White dove sat on the castle wall, The, 4267  
 White Hart, The, with music, 3846  
 Whither, midst falling dew, 2810  
**Whiting, W.**  
 Eternal Father, strong to save, 4852  
**Whitman, Walt**  
 O Captain! my Captain! 2005  
**Whittier, John Greenleaf**  
 At Last, 3636



# INDEX

## Whittier, John Greenleaf

Barbara Frietchie, 4851  
Barefoot Boy, The, 2196  
Maud Müller, 3271  
My Playmate, 4920  
Who Can This Somebody Be? 564  
Who comes here? 826  
Who fed me from her gentle breast, 823  
Who is Silvia? What is she, 3942  
Who killed Cock Robin? 2406  
Who would true valour see? 2004  
Why is Pussy in bed? 4856  
Why It Is Cold In May, 5489  
"Why sitt'st thou by that ruined wall," 5374  
Why the Robin's Breast is Red, 3964  
Why weep ye by the tide, ladie? 1856

## Wilcox, Ella Wheeler

Babyland, 1491  
My Ships, 1782  
Wishing, 2126  
Wild was the night, yet a wilder night, 2293  
Will you walk into my parlour? 3556  
William the Conqueror, 3347  
Willie's Lodger, 2724  
Willy boy, Willy boy, where are you going? in colour, 4267

Wind and the Moon, The, 3128  
Wind came up out of the sea, A, 3793  
Wind in a Frolic, The, 348  
Wind one morning sprang up from sleep, The, 348

Winter Song, A, 2915  
Winter Wind, The, 2915  
Wise Sayings from Shakespeare, 2921  
Wish, A, 924

Wishing, by Ella Wheeler Wilcox, 2126  
Wishing, by William Allingham, 1033  
With fingers weary and worn, 2808  
Without haste! without rest, 1559

## Wolfe, Charles

Burial of Sir John Moore, The, 701  
Wolsey, The Fall of Cardinal Wolsey, 2916  
Woman was old and ragged and grey, The, 5241  
Woman's cause is man's, The, 4527  
Woman's Shortcomings, A, 4209  
Wonderful One-Hoss Shay, The, 5045

## Wordsworth, William

By the Sea, 1855  
Composed upon Westminster Bridge, 3966  
Daffodils, The, 96  
Fidelity, 3556  
I Travell'd Among Unknown Men, 4921  
Kitten and the Falling Leaves, The, 3420  
London (in 1802), 3965  
Lucy, 700  
Lucy Gray, 1854  
March, 1276  
Ode on Immortality, 3633  
Pet Lamb, The, 1881  
Peter Bell: A Tale (The Flight of Peter Bell), 3963  
Rainbow, The, 701  
Reaper, The, 1561  
She Was a Phantom of Delight, 3347  
Three Years She Grew, 4921  
To a Butterfly, 4013

## Wordsworth, William

To a Skylark, 5490  
To the Cuckoo, 1883  
To the Skylark, 2127  
Work of the Poets, The, 4266  
World, The, 524  
Worm, The, 1856  
Worn and footsore was the Prophet, 5139  
Wotton, Sir Henry  
Character of a Happy Life, The, 4013  
Wreck of the Hesperus, The, 97  
Wynken, Blynken, and Nod, 92

## Y

Ye mariners of England, 704  
Ye sons of France, awake to glory, 4688  
Year had all the Days in charge, The, 5489  
Year's at the spring, The, 701  
You are going out to tea to-day, 4398  
You are old, Father William, the young man cried, 566  
You know we French stormed Ratisbon, 3966  
You see, merry Phyllis, that dear little maid, 3421  
You shall have an apple, 2128  
You spotted snakes, with double tongue, 2915  
Young and old, 3318  
Young lambs to sell, 826  
Young Lochinvar, 4687  
Young Mouse, The, 922  
Young Sophy leads a life without alloy, 1491

## SONGS WITH MUSIC

Baa, baa, black sheep, 1786  
Bees, The, 3970  
Bogie Man, The, 4654  
Child's Evening Prayer, 3422  
Cuckoo and the Jackass, 3796  
Curly Locks, 1568  
Dance a Baby, 2128  
Ding, dong, bell, 2484  
Frog he would a-wooing go, A, 1492  
Girls and boys come out to play, 1036  
Gosey, Goosey Gander, 2294  
Hickory, dickory, dock, in colour, 704  
Hush-a-bye, baby, in colour, face 5615  
I love sixpence, 2406  
I saw three ships, in colour, 2154  
Jack and Jill, 5245  
Ladybird, Fly, 3028  
Lavender's Blue, 4925  
Little Bingo, 2726  
Little Bo-peep, 1208  
Little Jack Horner, 968  
M. N. O., 3276  
Old King Cole, 4857  
Old woman tossed in a blanket, 1688  
See-saw, Margery Daw, 826  
Three blind mice, 925  
What are little boys made of? 5142  
Where are you going to, my pretty maid? 1126  
White Hart, The, 3846





032  
C437a

v. 24

